Enclosure 5

Potential Wetland Mitigation Sites Within the Municipality of Anchorage

June 1988

RESOURCE ANALYSTS

Potential Wetland Mitigation Sites Within the Municipality of Anchorage

US Department of Commerce
NOAA Coastal Services Center Library
2234 South Hobson Avenue
Charleston, SC 29405-2413

Prepared by

Resource Analysts

in association with

Falls Creek Environmental
Rundquist & Company

and

Fineline Graphics

Prepared for the Municipality of Anchorage
Economic Development and Planning Department
Contract No. 81837

June 1988

ALASKA COASTAL MANAGEMENT PROGRAM

The preparation of this document was financed in part by funds from the Alaska Coastal Management Program and the Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration, U.S. Department of Commerce. It was administered by the Alaska Department of Community and Regional Affairs, Division of Municipal and Regional Assistance through the Municipality of Anchorage, Alaska.

INTRODUCTION

The purpose of this project was to identify wetlands within the Municipality of Anchorage (MOA) which may benefit from mitigation actions to:

(1) restore or rehabilitate disturbed or significantly altered wetlands; or

(2) enhance the value of specific wetlands by modifying or improving their wetland functions.

An ancillary objective of this project was to identify wetlands which may be appropriate for acquisition by MOA or other agencies and organizations to protect important wetland functions from development activities or disturbance.

Preparation of this list of Potential Wetland Mitigation Sites is the initial phase of soliciting agency and public input for wetland locations of concern and assimilating preliminary background information to evaluate the potential for mitigation actions. This report is intended to be a working document for the MOA subject to updates, revisions, and the inclusion of supplemental information pertinent to the evaluation of potential mitigation actions in wetlands.

Funding for this project was provided through a grant from the Alaska Coastal Management Program.

EVALUATION PROCEDURES FOR MITIGATION WETLANDS

The project team reviewed wetlands identified in the Anchorage Wetlands Management Plan (Draft Revision September 1987), freshwater wetlands within the MOA but not covered by the Wetlands Management Plan, and wetlands which occur in the intertidal areas within the MOA from Portage Creek to Eklutna. Potential wetland mitigation locations were geographically grouped into three areas: Portage Creek to Girdwood; the Anchorage Bowl; and Eagle River to Eklutna. Information concerning suggested wetland mitigation sites and general background data was gathered from government agencies, reports, and interviews with knowledgeable individuals concerning Anchorage area wetlands. Individuals and agencies contacted during the course of this study are identified in Appendix A, and a list of references is presented in Appendix B.

Approximately 90 wetland locations were initially evaluated by the project team; 51 wetland sites are considered in this report. Each wetland site is identified, pertinent descriptive information provided, and a location map of the site attached. The sites have been numbered sequentially from south to north with a prefix of "P" for the Portage-Girdwood area, "A" for the Anchorage Bowl, and "E" for the Eagle River-Eklutna area. An Evaluation Date has also been included to allow for revision and updating of individual site information or the inclusion of additional wetland locations. Since field reconnaissance of potential mitigation sites was not included within the scope of work for this phase of the project, the summary information, evaluations, and potential mitigation actions presented are based primarily on input received during interviews and data collection.

In assessing potential mitigation wetlands, particular attention was given to biological and hydrological characteristics of each site. Human use data, zoning, ownership, aerial photography, reference to Anchorage Wetlands Management Plan information, and soils data were also noted when available. Wetland types were divided into coastal/estuarine and freshwater. The identification of wetland functions follows the approach outlined in the September 1987 draft revision to the Anchorage Wetlands Plan and includes:

- groundwater recharge/discharge
- flood storage and desynchronization
- shoreline anchoring/erosion control
- sediment trapping
- nutrient retention and removal
- food chain support
- fisheries habitat
- wildlife habitat
- active recreation
- passive recreation/heritage value

A map of the general wetland location, wetland boundary, and area of interest for potential mitigation action is included for each site. The wetland boundary depicted is consistent with the wetland

limits currently recognized in the September 1987 draft Revised Anchorage Wetlands Plan. In some cases, particularly outside the Anchorage Bowl, suitable base maps were unavailable.

Due to the preliminary status of background information for individual wetland sites, the Potential Mitigation Actions as outlined are purposefully general, as is appropriate for this stage of the project. Future work should include prioritization of wetland mitigation sites, selection of a limited number of high priority wetlands for more detailed evaluation, and preparation of site-specific mitigation plans, including approximate costs for restoration and enhancement activities.

WETLAND ACQUISITION

In examining the ownership of potential mitigation wetland sites in this report, it is apparent that many of the wetlands of concern are fully or partially in private ownership. It is recognized that some of the Potential Mitigation Actions discussed may require acquisition of private lands before certain mitigation actions can be implemented.

Future discussions of potential acquisition of high value wetlands should include the groups and organizations with wetland interests and the ability to acquire and management such lands. Appropriate groups might include the Alaska Department of Fish and Game, MOA Planning and Economic Development Department, MOA Heritage Land Bank, U.S. Fish and Wildlife Service, ADNR Division of Parks, Ducks Unlimited, and private land owners, as appropriate. Purchase, trades, lease buy-outs, and other innovative land acquisition actions could be considered by such a group.

SITE INFORMATION FOR POTENTIAL MITIGATION WETLANDS

The following section presents the assimilated site information for each of the potential wetland mitigation locations. Categories of information coverage are standardized for each site, and a map identifying the location, wetland limits, and general area of mitigation concern follows each information text.

POTENTIAL WETLAND MITIGATION SITES

within the

MUNICIPALITY OF ANCHORAGE

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: P1
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: PORTAGE TO POTTER MARSH

LOCATION NAME: PORTAGE TO GIRDWOOD PONDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): N/A

MOA WETLAND MAP SHEET (1982 COVERAGE): N/A

MOA AERIAL PHOTO: Date 1985 Number 34-37,38a,39,40

WETLAND OWNERSHIP: MOA _____ Public X Private _____

ZONING: N/A

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) X Freshwater X

primarily freshwater runoff impounded between ARR and Seward Highway; some areas are perched above tidal influence, while others are actively influenced by tidal fluctuations

SOILS:

typical soils may include near surface bedrock with coarse grained colluvial deposits overlain by and intermixed with fine-grained tidal deposits (silts)

Depth to water table: may be near surface
Surface soil erodibility: may be highly erodible

EXISTING HABITAT AND VEGETATION:

open water ponds with vegetated margins

FISH AND WILDLIFE USE:

ponds have been sampled by ADF&G and many found to support Dolly Varden and rearing juvenile coho salmon; seasonal migratory bird use, especially in the spring

HUMAN USE:

wildlife viewing

HYDROLOGY:

Watershed: unnamed creeks
Location within watershed: at creek mouth/estuary

Water Balance Components:

Mean annual precipitation: about 40 inches (Ott Water Engrs, 1979)
Evapotranspiration: 10-20 inches estimated for Anchorage (Zenone, 1976), likely similar for this area
Tidal influence: diurnal tide will likely contribute water to the site
Stream channel inflow/outflow: significant inflow from the small creeks draining the mountains during the snowmelt period in spring and rainstorms in the late summer and fall - stream outflow will probably be significant because of the excess precipitation over evapotranspiration
Surface runoff inflow: significant during runoff events in areas where surface runoff has not been concentrated into creek channels
Groundwater inflow/outflow: ponds generally at or near sea level - groundwater interchange would probably be negligable
Storage capacity: ponds generally have small surface areas and confined overbank areas and would not likely be capable of storing large quantities of water during a runoff event

Water Quality Components:

Wetland quality: unknown; probably minimal capacity for water quality improvement within the wetland
Pollutant sources: washoff from the Seward Highway and railroad embankments may contribute sediments, oil and grease, and other pollutants to the ponds; runoff from the mountains would tend to flush pollutants from the ponds

SUPPLEMENTAL INFORMATION:

1"=100 feet MOA Maps 5112, 5113, 5214, 5314

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement ___X___ Acquisition _____

Existing ponds upslope of the Seward Highway and ARR could be enhanced to provide nesting, feeding, and staging habitat for waterfowl and waterbirds. Where juvenile salmonids have access to the wetlands and ponds, rearing areas could be developed.

NO MAP AVAILABLE

Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: P1	PORTAGE TO Site Name: GIRDWOOD WETLANDS	MOA Wetland No.: N/A	Prepared by: Resource Analysts 7/88	

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: P2
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: PORTAGE TO POTTER MARSH

LOCATION NAME: TWENTYMILE RIVER DRAINAGE

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): N/A

MOA WETLAND MAP SHEET (1982 COVERAGE): N/A

MOA AERIAL PHOTO: Date 1985 Number 40,41,42

WETLAND OWNERSHIP: MOA _____ Public X Private _____

ZONING: N/A

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) X Freshwater X

Lower reach of the Twentymile River system is tidally influenced with tidal guts extending into the wetland from the main river. Wetlands are open marsh with limited availability of open water in some areas.

SOILS:

may be alluvial deposits with significant amounts of silts and clay overlain by peat

Depth to water table: may be near surface
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

sparse vegetation, with fairly uniform sedges; high water table; limited open water ponds

FISH AND WILDLIFE USE:

waterfowl and geese spring and fall staging, feeding; some nesting but limited due to type of habitat; some fall staging for sandhill cranes when migration over Portage Pass is halted by weather; used by moose summer and winter; pink, king, sockeye, coho in Twentymile River system; possible rearing in wetlands by king and coho salmon

HUMAN USE:

wildlife viewing, hunting, fishing, trapping, cross country skiing,

HYDROLOGY:

Watershed: Twentymile River
Location within watershed: on and adjacent to tributary creeks that are tidally influenced

Water Balance Components:

Mean annual precipitation: about 40 inches (Ott Water Engrs, 1979)
Evapotranspiration: 10-20 inches estimated for Anchorage (Zenone, 1976), likely similar for this area
Tidal influence: diurnal tide will likely contribute water to the site
Stream channel inflow/outflow: significant inflow is probable from the small creeks draining the mountains during the snowmelt period in spring and rainstorms in the late summer and fall; stream outflow will likely be significant because of the excess precipitation over evapotranspiration
Surface runoff inflow: significant during runoff events along mountains in areas where surface runoff has not been concentrated into creek channels
Groundwater inflow/outflow: unknown - wetland may recharge groundwater, but quantity of net outflow is likely to be small
Storage capacity: large surface area of wetlands provides a large storage capacity for probable longer duration flow through potential mitigation areas

Water Quality Components:

Wetland quality: unknown; probably significant capacity for water quality improvement within the wetland
Pollutant sources: some washoff from railroad, but most mitigation areas may not be affected

SUPPLEMENTAL INFORMATION:

prior enhancement work on wetland areas along west side of Twentymile River; depressions blasted by joint state/federal effort to provide open water for waterfowl; ponds made too deep, sides too straight

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement __X__ Acquisition _____

Tidal guts on west side tributaries could have water control structures or checkdams installed to provide shallow, seasonally flooded wetlands for staging and nesting waterfowl. Structures may be designed to create estuarine wetlands with occasional tidal mixing. Shallow water wetland could provide rearing habitat for for salmonids spawned in other areas of the Twentymile River drainage.

NO MAP AVAILABLE

Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: P2	Site Name: TWENTY MILE RIVER	MOA Wetland No.: N/A	Prepared by: Resource Analysts 7/88	

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: P3
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: PORTAGE TO POTTER MARSH

LOCATION NAME: GIRDWOOD TIDEFLATS EAST OF GLACIER CREEK

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): N/A

MOA WETLAND MAP SHEET (1982 COVERAGE): N/A

MOA AERIAL PHOTO: Date 1985 Number 35

WETLAND OWNERSHIP: MOA _____ Public X Private _____

ZONING: N/A

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) X Freshwater _____

estuarine wetlands with limited open water; some unvegetated tideflats; homogeneous Carex sp.

SOILS:

The site is in an estuarine deposit geologic unit, composed of silt and clay of marine origin with poor drainage conditions. The following soils information is from a well log at a site in an estuarine deposit geologic unit along the highway northwest of the site (Glass and Brabets, 1988):

	Type	Thickness	Permeability
Surface layer:	wet peat, gravelly	6 ft	low
Sub layer 1:	clay	16 ft	very low
Sub layer 2:	water gravel	22 ft	likely high

Depth to water table: likely near surface
Surface soil erodibility: likely high

EXISTING HABITAT AND VEGETATION:

sedge meadow and unvegetated tideflats

FISH AND WILDLIFE USE:

some use by waterfowl and shorebirds, but limited by availability of open water habitats; seasonal use of tideflats by bald eagles (feeding and roosting)

HUMAN USE:

open space, wildlife viewing (especially bald eagles)

HYDROLOGY:

Watershed: Glacier Creek
Location within watershed: at creek mouth/estuary, adjacent to the channel

Water Balance Components:
- Mean annual precipitation: about 40 inches (Glass and Brabets, 1988)
- Evapotranspiration: 10-20 inches estimated for Anchorage (Zenone, 1976), likely similar this area
- Tidal influence: diurnal tide will likely contribute water to the site
- Stream channel inflow/outflow: significant inflow from Glacier or Virgin Creeks is possible at this site depending on boundaries selected; stream outflow will be significant because of the excess precipitation over evapotranspiration
- Surface runoff inflow: highway probably blocks surface runoff
- Groundwater inflow/outflow: site generally at or near sea level; groundwater interchange would likely be negligible
- Storage capacity: storage capacity would depend on the ultimate size of the wetland enhanced

Water Quality Components:
- Wetland quality: unknown; site would have low to moderate capacity for water quality improvement within the wetland
- Pollutant sources: washoff from the Seward Highway may contribute sediments, oil and grease, and other pollutants to the wetland

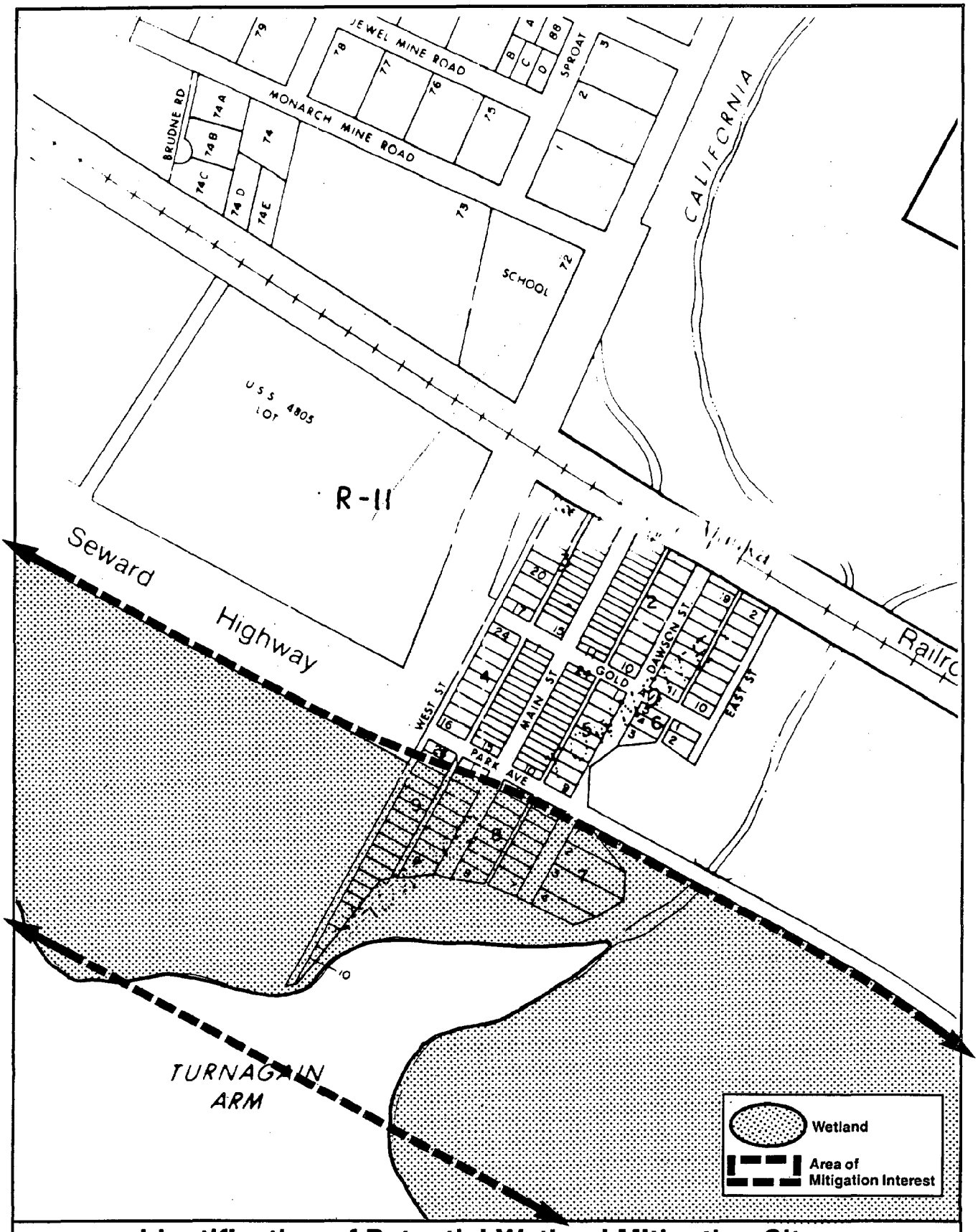
SUPPLEMENTAL INFORMATION:

1"=100 feet MOA Maps 5112, 5113

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement __X__ Acquisition _____

some areas of tideflats support homogeneous sedge communities but lack open water areas, suitable nesting locations, feeding areas which would encourage waterfowl use of the wetland habitat; develop shallow depressions which would be influenced by marine waters but not degraded by silt deposition; consider possible impoundment by embankment to retain outflow of Glacier and/or Virgin Creeks



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: P3	Site Name: GIRDWOOD TIDEFLATS	MOA Wetland No.: None	Prepared by: Resource Analysts 7/88	Scale: 1"=100'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: P4
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: PORTAGE TO POTTER MARSH

LOCATION NAME: VIRGIN CREEK WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 158/166

MOA WETLAND MAP SHEET (1982 COVERAGE): N/A

MOA AERIAL PHOTO: Date 1985 Number 35, 36

WETLAND OWNERSHIP: MOA X (158) Public X (166) Private

ZONING: R-11 (Turnagain Arm District)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) X Freshwater X

series of partly-connected, patterned, open-complex wetlands north of ARR right-of-way within Virgin Creek floodplain (MOA wetland 158); between ARR and Seward Highway, wetlands important to water quality of lower Glacier and Virgin Creeks

SOILS:

site is mostly in an estuarine deposit geologic unit, composed of silt and clay of marine origin with poor drainage conditions; the following soils information is from a well log at a site in an estuarine deposit geologic unit along the highway northwest of the site (Glass and Brabets, 1988):

	Type	Thickness	Permeability
Surface layer:	wet peat, gravelly	6 ft	low
Sub layer 1:	clay	16 ft	very low
Sub layer 2:	water gravel	22 ft	likely high

Depth to water table: likely near surface
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

sedge meadows in tidally-influenced areas

FISH AND WILDLIFE USE:

waterbirds, moose, beaver, muskrat, pink and coho salmon

HUMAN USE:

wildlife viewing

HYDROLOGY:

hydrological association of Glacier Creek and Virgin Creek mixed upstream from wetland area;

Watershed: Virgin Creek
Location within watershed: near creek mouth/estuary, on and adjacent to the channel

Water Balance Components:

Mean annual precipitation: about 40 inches (Glass and Brabets, 1988)
Evapotranspiration: 10-20 inches estimated for Anchorage (Zenone, 1976), likely similar for this area
Tidal influence: diurnal tide will likely contribute water to the site
Stream channel inflow/outflow: significant inflow from Virgin Creek and other unnamed creeks is possible at this site; Virgin Creek may have sustained base flow in winter (Glass and Brabets, 1988); stream outflow will be significant because of the stream inflow and excess precipitation over evapotranspiration
Surface runoff inflow: surface runoff likely from the mountain to the east
Groundwater inflow/outflow: site may have a net outflow to the groundwater system
Storage capacity: storage capacity is likely to be large

Water Quality Components:

Wetland quality: Virgin Creek has relativly low concentrations of dissolved solids and the primary cation and anion are calcium and bicarbonate (Glass and Brabets, 1988); wetland may have moderate capacity for water quality improvement within the wetland

Pollutant sources: washoff from the Railroad may contribute sediments, oil and grease, and other pollutants to the wetland

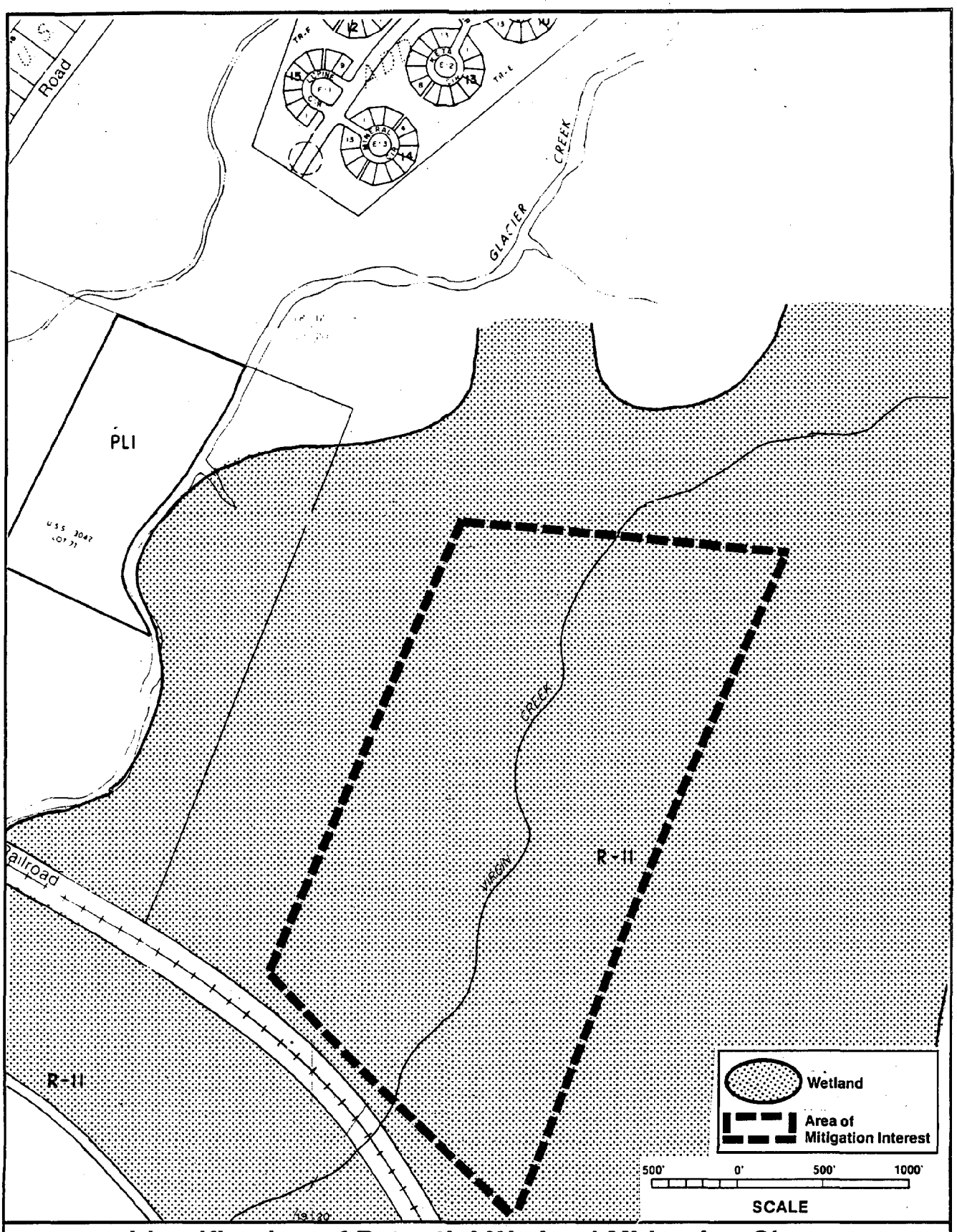
SUPPLEMENTAL INFORMATION:

1"=100 feet MOA Maps 5014, 5015

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement ___X___ Acquisition _____

possible impoundment of Virgin Creek flow upstream from ARR to create open water areas (MOA wetland 158); may also use winter construction to create shallow, irregular depressions and islands in wetlands complex; impoundment in tidally-influenced area could create estuarine wetlands with open water suitable for waterfowl staging and feeding; may be able to develop freshwater or moderately estuarine rearing areas for salmonids, particularly coho salmon



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: P4	Site Name: VIRGIN CREEK WETLANDS	MOA Wetland No.: 158 & 166	Prepared by: Resource Analysts 7/88	Scale:

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: P5
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: PORTAGE TO POTTER MARSH

LOCATION NAME: TIMBERLINE DRIVE & VAIL DRIVE

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 145

MOA WETLAND MAP SHEET (1982 COVERAGE): N/A

MOA AERIAL PHOTO: Date 1985 Number 34, 36

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: R-11 (Turnagain Arm District)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

high water table open bog with some beaded pond development

SOILS:

site appears to be in a glacial diamicton geologic unit, composed of chiefly diamicton containing high proportion of silt and clay matrix with generally poor drainage conditions (Glass and Brabets, 1988):

Depth to water table: may be near surface
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

two to four small open water ponds with water lilies, some emergent vegetation on margins

FISH AND WILDLIFE USE:

past use by small numbers of shorebirds; some potential for occassional summer use by moose; however, area is small, surrounded by residential development, and lacks cover

HUMAN USE:

open space, hiking, wildlife viewing

HYDROLOGY:

Watershed: unnamed creeks
Location within watershed: unknown

Water Balance Components:
Mean annual precipitation: about 40 inches (Glass and Brabets, 1988)
Evapotranspiration: 10-20 inches estimated for Anchorage (Zenone, 1976), likely similar for this area
Tidal influence: none
Stream channel inflow/outflow: apparently a small channel flowing through the site
Surface runoff inflow: surface runoff possible from the mountain to the east
Groundwater inflow/outflow: site may have a net outflow to the groundwater system
Storage capacity: storage capacity may be small

Water Quality Components:
Wetland quality: unknown; probably has little capacity for water quality improvement within the wetland
Pollutant sources: developed residential area may introduce washoff which may contribute sediments, oil and grease, and other pollutants to the wetland

SUPPLEMENTAL INFORMATION:

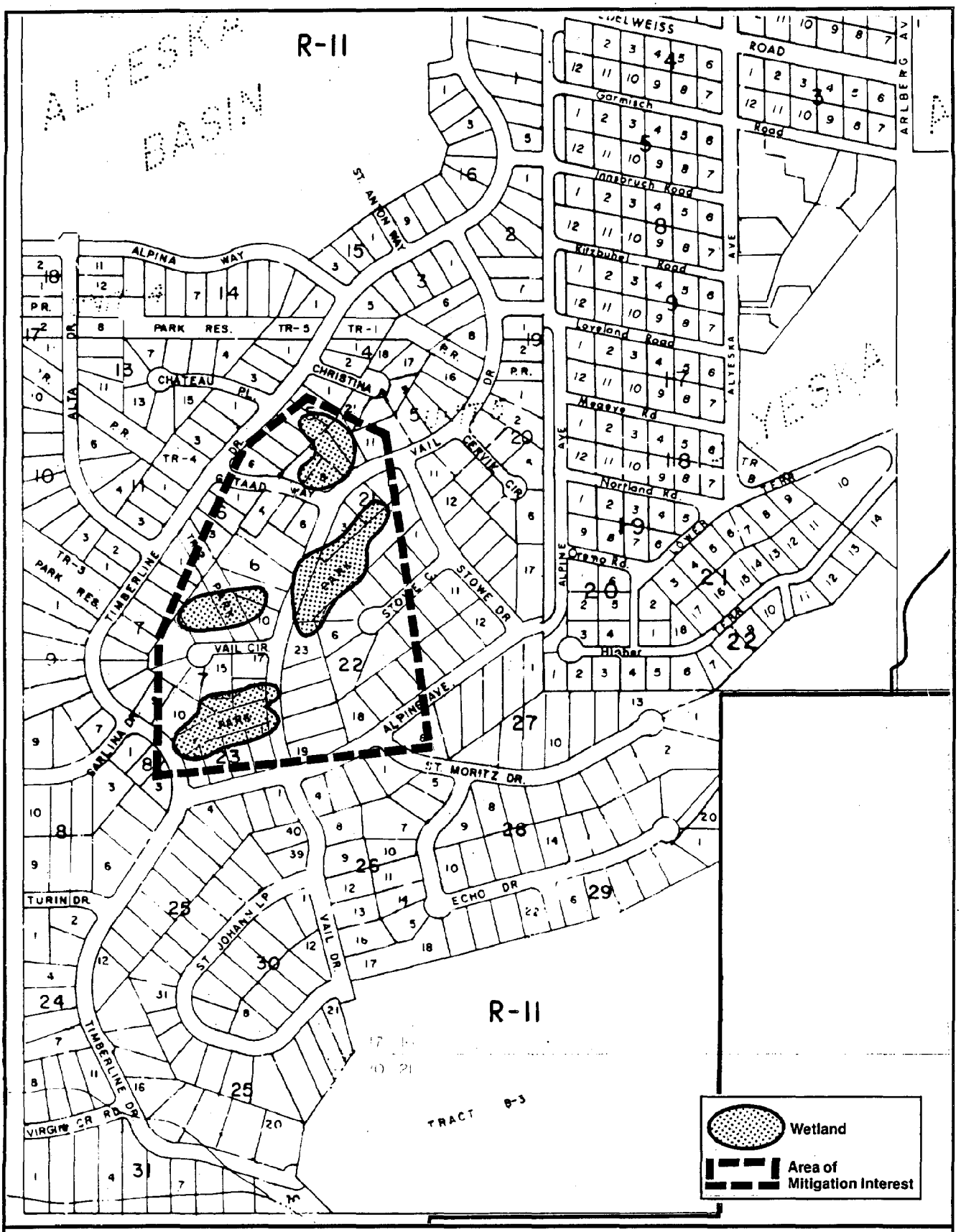
1"=100 feet MOA Maps 4915, 4916

some open space plotted in private ownership lands

POTENTIAL MITIGATION ACTIONS:

Restoration ___X___ Enhancement _____ Acquisition _____

Wetlands southeast of road intersection should be evaluated for water flow disturbance from surrounding residential development. Altered drainage patterns may need attention to restore wetland to pre-disturbance condition.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: P5	Site Name: TIMBERLINE DRIVE AND VAIL DRIVE	MOA Wetland No.: 145	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: P6
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: PORTAGE TO POTTER MARSH

LOCATION NAME: GLACIER CREEK

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 144 (west part)

MOA WETLAND MAP SHEET (1982 COVERAGE): N/A

MOA AERIAL PHOTO: Date 1985 Number 36

WETLAND OWNERSHIP: MOA X Public _____ Private _____

ZONING: R-11 (Turnagain Arm District)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

wetlands adjoining east side of Glacier creek downstream from crossing of Alyeska Highway

SOILS:

site is in a glacial diamicton geologic unit, composed of chiefly diamicton containing high proportion of silt and clay matrix with generally poor drainage conditions (Glass and Brabets, 1988)

Depth to water table: probably near surface
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

unknown

FISH AND WILDLIFE USE:

Dolly Varden and coho salmon utilize Glacier Creek, but suitable clear water rearing areas are limited

HUMAN USE:

open space, wildlife viewing, fishing

HYDROLOGY:

hydrological connection of MOA wetland 144 to Glacier Creek not known but suspected

Watershed: Glacier Creek
Location within watershed: adjacent to creek; may be within floodplain of unknown recurrence interval (Flood Insurance Study may identify flood boundary)

Water Balance Components:

Mean annual precipitation: about 40 inches (Glass and Brabets, 1988)
Evapotranspiration: 10-20 inches estimated for Anchorage (Zenone, 1976), likely similar for this area
Tidal influence: none
Stream channel inflow/outflow: unknown
Surface runoff inflow: surface runoff likely from the developed area and mountain to the east
Groundwater inflow/outflow: site may receive a net inflow from the groundwater system
Storage capacity: storage capacity may be large

Water Quality Components:

Wetland quality: unknown; site may have low to moderate capacity for water quality improvement within the site
Pollutant sources: developed residential area may introduce washoff which may contribute sediments, oil and grease, and other pollutants to the wetland

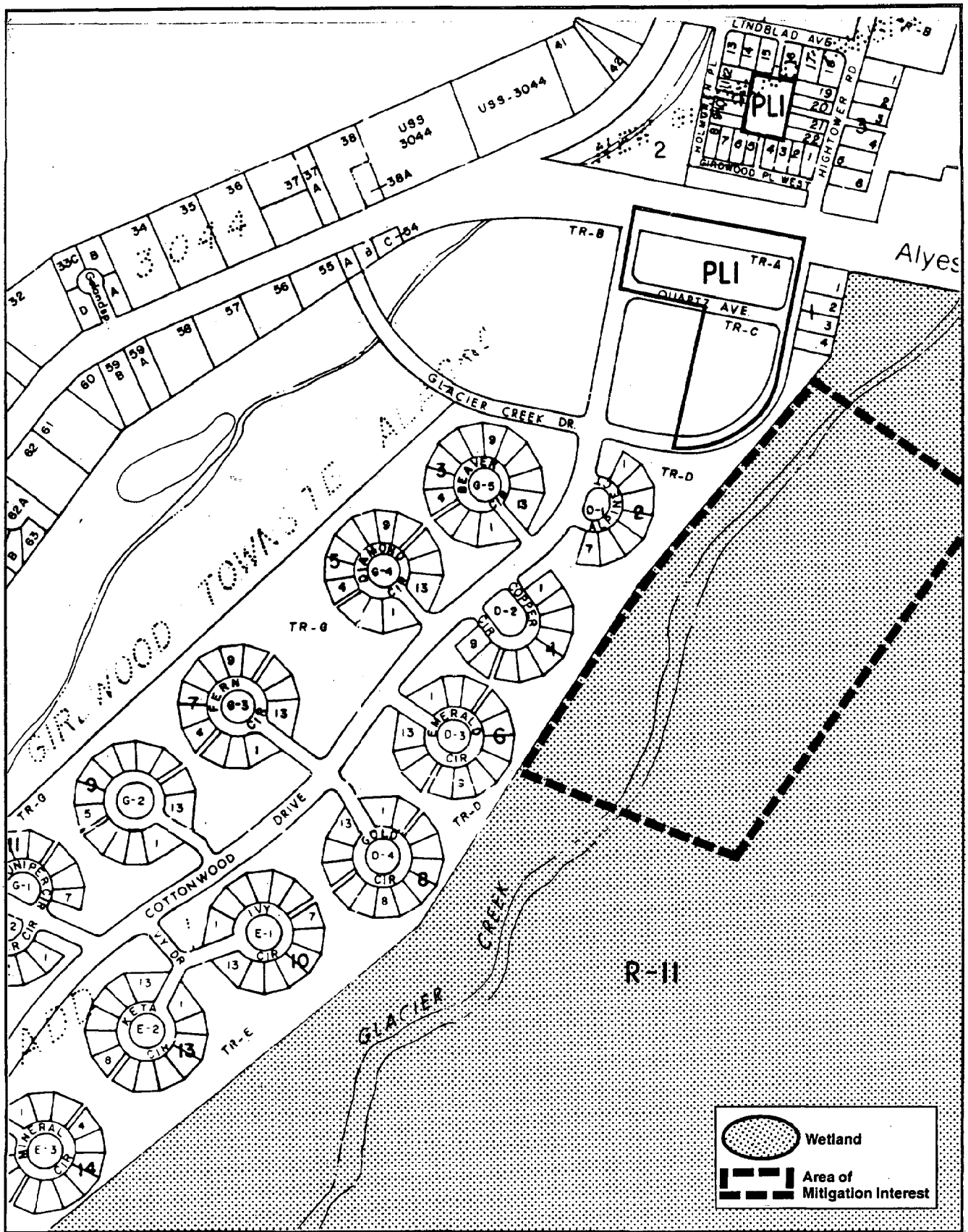
SUPPLEMENTAL INFORMATION:

1"=100 feet MOA Map 4815

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement ___X___ Acquisition _____

Construction of access channels and shallow depressions in wetland could provide rearing habitat for salmon. The site should be connected only at outlet so that silty water from Glacier Creek is not allowed to enter and eventually fill up the site with silt. Suitable rearing habitat is limited in the Glacier Creek drainage.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: P6	Site Name: GLACIER CREEK	MOA Wetland No.: 144	Prepared by: Resource Analysts 7/88	Scale: 1"=100'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: P7
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: PORTAGE TO POTTER MARSH

LOCATION NAME: BOG AT UPSTREAM END OF WETLAND 160

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 160

MOA WETLAND MAP SHEET (1982 COVERAGE): N/A

MOA AERIAL PHOTO: Date 1985 Number 35

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: unknown, probably R-11

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	
Nutrient Retention & Removal	
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

area is currently sphagnum bog with high water table, limited open water areas; has beaver pond along Tidewater Slough

SOILS:

The site may be in an estuarine deposit geologic unit composed of silt and clay of marine origin with poor drainage conditions. The following soils information is from a well log at a site to the east near the border between the estuarine deposit and alluvial deposit geologic units (Glass and Brabets, 1988):

	Type	Thickness	Permeability
Surface layer:	organics	2 ft	low
Sub layer 1:	sand and gravel	11 ft	high
Sub layer 2:	silty hardpan	11 ft	low

Depth to water table: spongy sphagnum appears to have very high water table
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

sphagnum bog, scattered black spruce around margins grading to western hemlock/Sitka spruce in adjoining drier areas

FISH AND WILDLIFE USE:

moose, snowshoe hare; rearing coho and king salmon in Tidewater Slough

HUMAN USE:

open space, wildlife viewing, cross country skiing

HYDROLOGY:

Watershed: Tidewater Slough
Location within watershed: upstream segment of slough

Water Balance Components:
Mean annual precipitation: about 40 inches (Glass and Brabets, 1988)
Evapotranspiration: 10-20 inches estimated for Anchorage (Zenone, 1976), likely similar for this area
Tidal influence: probably none
Stream channel inflow/outflow: significant inflow from unnamed creeks is possible at this site - stream outflow may be significant because of the stream inflow and excess precipitation over evapotranspiration
Surface runoff inflow: surface runoff likely from the mountain to the west
Groundwater inflow/outflow: site may have a net outflow to the groundwater system
Storage capacity: may be moderate

Water Quality Components:
Wetland quality: unknown; site may have moderate capacity to improve water quality within the wetland
Pollutant sources: none apparent

SUPPLEMENTAL INFORMATION:

1"=100 feet MOA Maps 4812, 4912

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement __X__ Acquisition _____

Lack of open water areas does not allow this wetland to achieve full potential for waterfowl nesting, staging, and feeding habitat. Winter construction could be used to scoop out shallow

depressions, ponds, and interconnected channels to attract waterfowl. Advisability of direct hydrologic connection to creek in MOA wetland 160 would have to be investigated. Juvenile coho and king salmon present in Tidewater Slough could utilize accessible open water areas for freshwater rearing.

NO MAP AVAILABLE

Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: P7	Site Name: WETLAND 160 BOG	MOA Wetland No.: 160	Prepared by: Resource Analysts 7/88	

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: P8
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: PORTAGE TO POTTER MARSH

LOCATION NAME: TIDEWATER SLOUGH WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 160/164

MOA WETLAND MAP SHEET (1982 COVERAGE): N/A

MOA AERIAL PHOTO: Date 1985 Number 35

WETLAND OWNERSHIP: MOA _____ Public X Private _____

ZONING: unknown

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) X Freshwater X

Wetlands along Tidewater Slough include tidally-influenced open marsh areas immediately upstream from the Seward Highway and open bog areas (freshwater) at the upstream end of the drainage. Beaver pond is apparently present on Tidewater Slough above tidal influence. There is a limited presence of open water areas in the bog habitat.

SOILS:

Site may be in an estuarine deposit geologic unit composed of silt and clay of marine origin with poor drainage conditions. The following soils information is from a well log at a site to the east near the border between the estuarine deposit and alluvial deposit geologic units (Glass and Brabets, 1988):

	Type	Thickness	Permeability
Surface layer:	organics	2 ft	low
Sub layer 1:	sand and gravel	11 ft	high
Sub layer 2:	silty hardpan	11 ft	low

Depth to water table: may be near surface
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

sparsely vegetated tidal areas; homogeneous Carex sp. away from tidal guts; open bog with sphagnum moss above tidal influence

FISH AND WILDLIFE USE:

Tidewater Slough currently provides rearing habitat for coho and king salmon which are apparently spawned in other systems. Rearing habitat in the tidally-influenced slough is very limited. Waterfowl habitat is limited in the tidal area. Beaver are present above tidal influence and have constructed dams on the stream.

HUMAN USE:

open space, wildlife viewing, cross country skiing

HYDROLOGY:

Watershed: Tidewater Slough
Location within watershed: near creek mouth/estuary, probably on and adjacent to the channel

Water Balance Components:
- Mean annual precipitation: about 40 inches (Glass and Brabets, 1988)
- Evapotranspiration: 10-20 inches estimated for Anchorage (Zenone, 1976), likely similar for this area
- Tidal influence: diurnal tide may contribute water to the site
- Stream channel inflow/outflow: significant inflow from unnamed creeks is possible at this site - stream outflow may be significant because of the stream inflow and excess precipitation over evapotranspiration
- Surface runoff inflow: surface runoff likely from the mountain to the west
- Groundwater inflow/outflow: site may have a net outflow to the groundwater system
- Storage capacity: storage capacity is probably large

Water Quality Components:
- Wetland quality: unknown; site probably has moderate capacity to improve water quality within the wetland
- Pollutant sources: none apparent

SUPPLEMENTAL INFORMATION:

1"=100 feet MOA Map 3134

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement ___X___ Acquisition _____

create open water habitat for waterfowl and suitable rearing areas for salmonids through construction of an impoundment and/or development of interconnected shallow depressions in the riparian wetlands; must balance estuarine habitat for waterfowl, freshwater wetland rearing for salmonids, and fish passage access for juvenile salmonids

NO MAP AVAILABLE

Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: P8	Site Name: TIDEWATER SLOUGH	MOA Wetland No.: 160	Prepared by: Resource Analysts 7/88	

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A1
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: WETLAND NORTH OF SECTION HOUSE

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 63

MOA WETLAND MAP SHEET (1982 COVERAGE): A110

MOA AERIAL PHOTO: Date 1985 Number 26-16, 9-5

WETLAND OWNERSHIP: MOA _____ Public X Private _____

ZONING: PLI (Public Lands and Institutions)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) X? Freshwater X?

wetland between ARR and Seward Highway north of Section House; open water and shallow margin vegetation; created by impeded drainage of the two embankments; may be isolated

SOILS:

probably tidal deposits composed of silt, very fine sand, and maybe clay; infiltration and permeability are extremely low (Emanuel and Cowing, 1982)

Depth to water table: likely near surface
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

unknown

FISH AND WILDLIFE USE:

waterfowl, shorebirds, geese, terns, gulls in adjoining Potter Marsh

HUMAN USE:

wildlife viewing, open space

HYDROLOGY:

Watershed: none
Location within watershed: between highway and railroad embankments with connection to Turnagain Arm

Water Balance components:

Mean annual precipitation: about 18 inches (Ott Water Engrs, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer
Tidal influence: probably receives water from diurnal tidal cycle
Stream channel inflow/outflow: no inflow; probable drainage channel outflow through culverts to tideflats
Surface runoff inflow: negligible
Groundwater inflow/outflow: may have net outflow to groundwater
Storage capacity: probably small due to small size and steep embankment slopes adjacent to the site

Water Quality Components:

Wetland quality: unknown; probably minimal water quality improvement capacity within wetland
Pollutant sources: washoff from the highway may introduce sediments, oil and grease, and other pollutants to the site

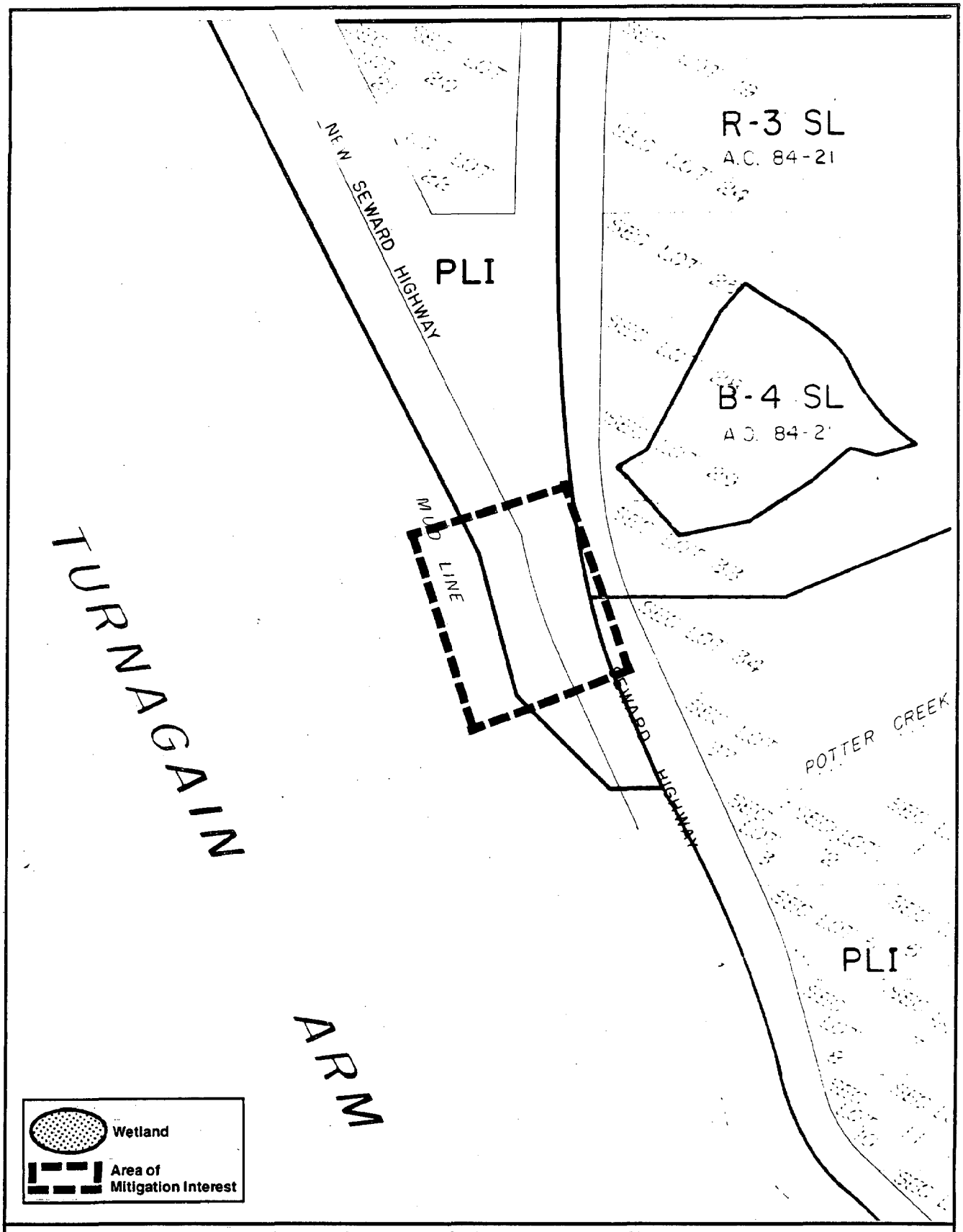
SUPPLEMENTAL INFORMATION:

none

POTENTIAL MITIGATION ACTIONS:

Restoration __X__ Enhancement _____ Acquisition _____

Remove fill material from wetland between Seward Highway and ARR and re-establish shallow water vegetation.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A1	Site Name: WETLAND NORTH OF SECTION HOUSE	MOA Wetland No.: 63	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A2
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: POTTER MARSH

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 63

MOA WETLAND MAP SHEET (1982 COVERAGE): A105 & A110

MOA AERIAL PHOTO: Date 1985 Number 8, 9

WETLAND OWNERSHIP: MOA _____ Public X Private X

SITE SPECIFIC WETLAND STUDIES: USGS Hydrology; Water Rights Permit

ZONING: Potter Point State Game Refuge; State Ownership, ADFG Mgt

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) X Freshwater X

open water estuarine marsh with good mix of feeding, nesting, resting areas; created by the impoundment of Rabbit Creek and Little Survival Creek during construction of the New Seward Highway

SOILS:

probably tidal deposits composed of silt, very fine sand, and maybe clay; infiltration and permeability are extremely low (Emanuel and Cowing, 1982)

Depth to water table: near surface
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

(south end) grass and sedges; open water at times, site is gradually drying up; alders, willows, Scirpus sp., Festuca vulca, Calamagrostis sp., wild raspberry, iris, cow parsnip and currant

(north end) extensive open water areas connected to Rabbit Creek and Little Rabbit Creek; good mix of open water, vegetated islands, escape/nesting cover

FISH AND WILDLIFE USE:

main marsh provides some of the best waterfowl and geese nesting and feeding habitat in the Anchorage area; mallard, pintail, Canada geese, Aleutian tern, gulls most conspicuous; (South end) tree swallows, red-winged black-birds, varied thrush; less suitable for waterfowl since fill placed in the area for roadways, old Weigh Station

HUMAN USE:

heavily utilized by the public for waterfowl and wildlife viewing, education; parking and viewing amenities provided by ADF&G; walking and hiking; ice skating; open space; cross country skiing.

HYDROLOGY:

Watershed: Rabbit, Little Rabbit, and Survival Creeks
Location within watershed: at mouth/estuary

Water Balance components:
Mean annual precipitation: about 18 inches (Ott Water Engrs, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer
Tidal influence: receives water from diurnal tidal cycle
Stream channel inflow/outflow: significant amounts; Survival Creek is main source to the south end of Potter Marsh
Surface runoff inflow: significant amounts
Groundwater inflow/outflow: may have net inflow from groundwater
Storage capacity: very large

Water Quality Components:
Wetland quality: see detailed reports; probably substantial water quality improvement capacity within wetland
Pollutant sources: washoff from the highway may introduce sediments, oil and grease, and other pollutants to the site

SUPPLEMENTAL INFORMATION:

34-acre parcel at the south end of the marsh includes a 55-year lease (expires 2015) for industrial/commercial purposes to Alaska Steel Corporation; several inholdings of private land occur along

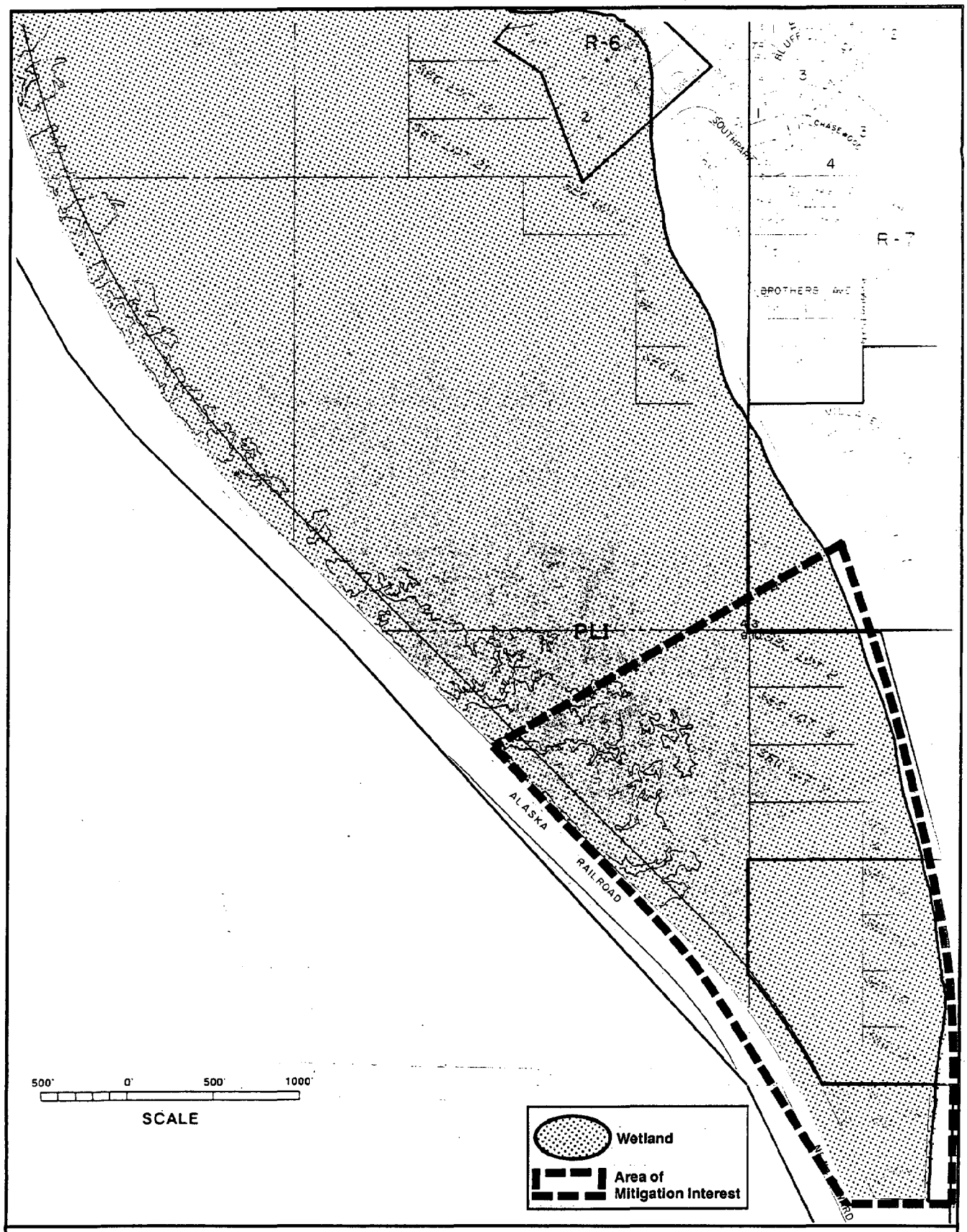
the east side of Potter Marsh adjoining the Old Seward Highway; detailed hydrology studies have been done at this site

1"=100 feet MOA Map 3034

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement _____ Acquisition __X__

Evaluate buy-out of existing commercial lease to avoid direct development impacts on the wetland should the lease rights be exercised. Consider purchase of private land inholdings to avoid development impacts and consolidate management of the wetland. Evaluate the advisability and benefits of dredging open water areas to improve waterbird habitat.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A2	Site Name: POTTER MARSH	MOA Wetland No.: 63	Prepared by: Resource Analysts 7/88	Scale:

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A3
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: RABBIT CREEK WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): N/A

MOA WETLAND MAP SHEET (1982 COVERAGE): A105

MOA AERIAL PHOTO: Date 1985 Number 7-4, 8-4

WETLAND OWNERSHIP: MOA _____ Public X Private X

ZONING: PLI (Public Lands and Institutions)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	
Flood Storage & Desynchronization	
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) X Freshwater _____

existing wetland is comprised of limited vegetated areas on essentially unvegetated tideflats; tidally-influenced channel of Rabbit Creek passes through the area west of the ARR embankment

SOILS:

tidal deposits composed of silt, very fine sand, and clay; relative permeability is low to very low (Freethey, 1976)

Depth to water table: near surface
Surface soil erodibility: highly erodible

EXISTING HABITAT AND VEGETATION:

tideflats with limited vegetative development on west (downstream) side of ARR embankment

FISH AND WILDLIFE USE:

Salmon and Dolly Varden use Rabbit Creek as a migration corridor to upstream spawning areas. Some areas of tideflats are used by ducks and geese for spring and fall staging and resting. Some existing auditory disturbance in the area due to the proximity of the ADF&G Rifle Range immediately north of the site.

HUMAN USE:

wildlife viewing, hunting, hiking

HYDROLOGY:

Watershed: Rabbit Creek
Location within watershed: at mouth/estuary

Water Balance Components:

Mean annual precipitation: about 16 inches (Ott Water Engrs, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer
Tidal influence: receives water from diurnal tidal cycle
Stream channel inflow/outflow: significant amounts available from Rabbit Creek
Surface runoff inflow: very little
Groundwater inflow/outflow: may have little net groundwater exchange
Storage capacity: depends on size of site

Water Quality Components:

Wetland quality: see reports for Rabbit Creek quality; probably moderate water quality improvement capacity within wetland
Pollutant sources: washoff from the railroad embankment may introduce sediments, oil and grease, and other pollutants to the site

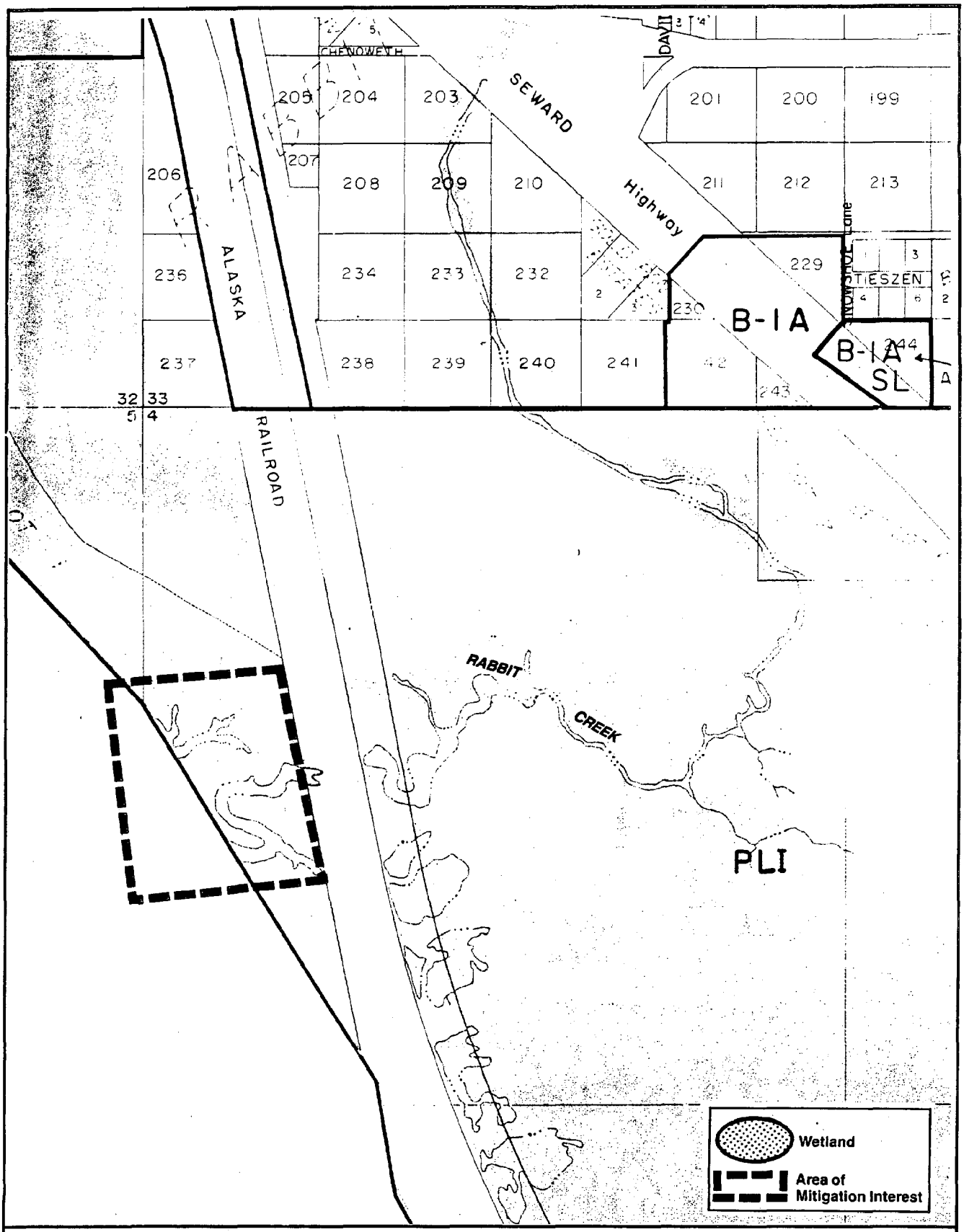
SUPPLEMENTAL INFORMATION:

1"=100 feet MOA Map 3134

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement ___X___ Acquisition _____

Development of an impoundment on Rabbit Creek providing estuarine shallow marsh on downstream side of the ARR right-of-way would enhance the limited areas of marsh vegetation which currently exist and potentially provide an extension of the Potter Marsh habitat. The impoundment would likely be more brackish than Potter Marsh and must provide for fish passage of salmon and Dolly Varden which utilize Rabbit Creek.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A3	RABBIT CREEK Site Name: WETLANDS	MOA Wetland No.: None	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A4
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: CAMPBELL/KLATT COASTAL IMPOUNDMENT

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): N/A

MOA WETLAND MAP SHEET (1982 COVERAGE): A74 & A83

MOA AERIAL PHOTO: Date 1985 Number 4-1 to 4-4
3-1, 3-2, 3-3

WETLAND OWNERSHIP: MOA X Public X Private X

SITE SPECIFIC WETLANDS STUDIES: feasibility study of impoundment for the Municipality currently in progress by Ott Water Engineers

ZONING: PLI (Public Lands and Institutions), R-1 (1 family residential district)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	
Flood Storage & Desynchronization	
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) X Freshwater

The area is currently comprised of vegetated and unvegetated tideflats and wetlands associated with series of small interconnected ponds constructed in an unsuccessful attempt to create a coastal marsh utilizing upland freshwater input.

SOILS:

tidal deposits composed of silt and gravel, very fine sand, and clay; relative permeability is low to very low (Freethey, 1976)

Depth to water table: near surface
Surface soil erodibility: highly erodible (see "in progress" feasibility report for detailed evaluation)

EXISTING HABITAT AND VEGETATION:

intertidal vegetation community and sparsely vegetated tidal mudflats

FISH AND WILDLIFE USE:

limited (occasionally abundant) use by shorebirds, waterfowl, and geese primarily during spring and fall staging; some nesting in permanent pond areas

HUMAN USE:

At present, limited use is made of the area during the fall by duck hunters; more suitable hunting habitat is available to the south toward Potter Marsh and north of the mouth of Campbell Creek. The area provides some wildlife viewing opportunities

HYDROLOGY:

see "in progress" feasibility report by Ott Water Engineers for details

Watershed: Bayshore Creek; unnamed creeks spring runoff
Location within watershed: at mouth/estuary

Water Balance Components:
Mean annual precipitation: about 15 inches (Ott Water Engrs, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer
Tidal influence: receives water from diurnal tidal cycle
Stream channel inflow/outflow: would require inflow from Bayshore and/or Campbell creeks and possibly some storm drain runoff
Surface runoff inflow: very little
Groundwater inflow/outflow: may have little net groundwater exchange
Storage capacity: depends on size of site

Water Quality Components:
Wetland quality: (see "in progress" feasibility report)
Pollutant sources: washoff from the steep slopes of the bluff may introduce sediments

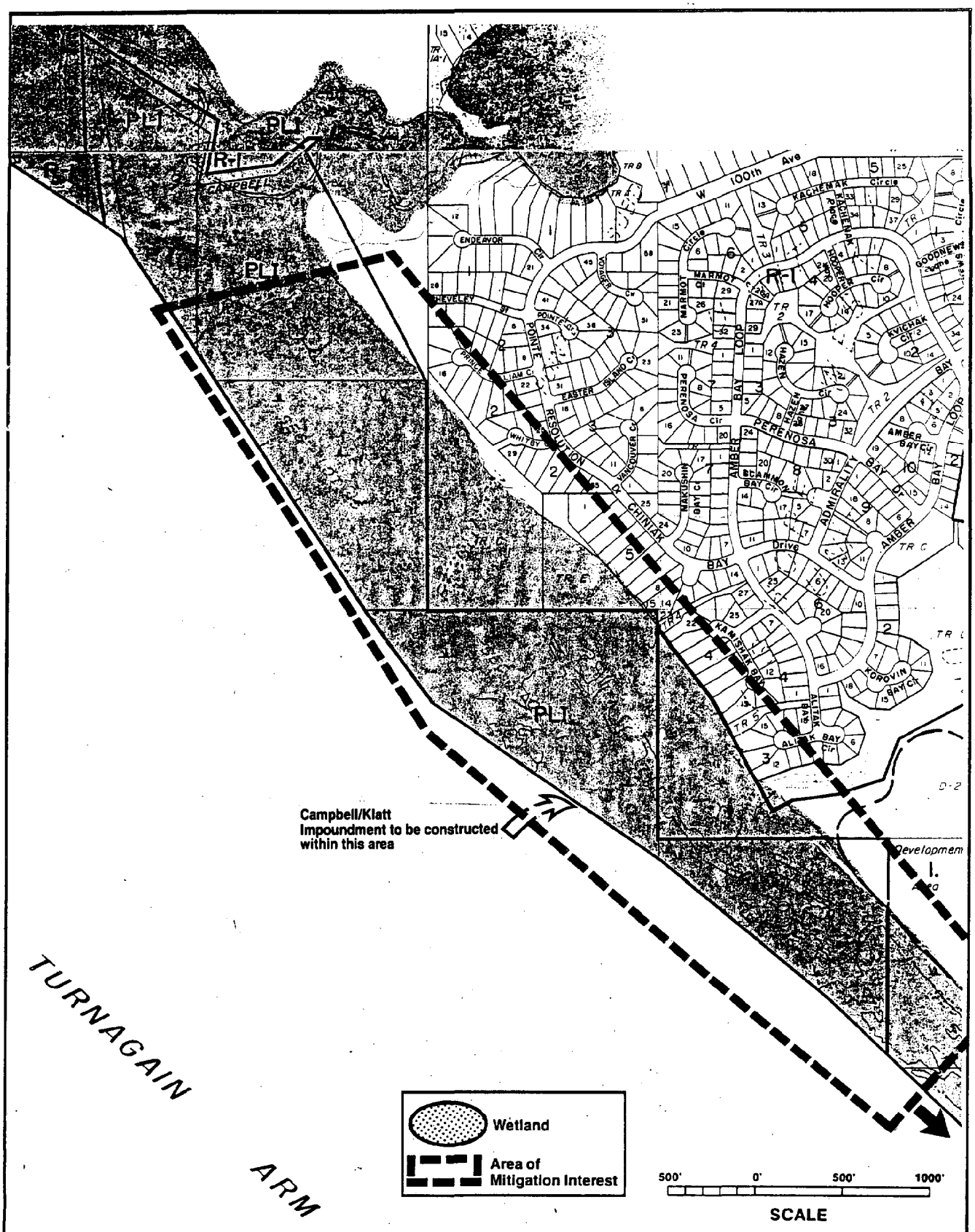
SUPPLEMENTAL INFORMATION:

1"=500 feet MOA Zoning Maps 13, 17

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement ___X___ Acquisition _____

Potential enhancement could result from development of a coastal impoundment on the tideflats utilizing freshwater input from the Klatt area and/or Campbell Creek. In addition, the impounded area would require creation of suitable depressions, islands, and shallow vegetated areas to provide nesting, staging, and feeding habitat for waterfowl. Concerns would involve adequate freshwater input, engineering feasibility, costs of construction, hunting activity and public safety, and concurrent uses (such as coastal bike trail).



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A4	CAMPBELL/KLATT Site Name: COASTAL IMPOUNDMENT	MOA Wetland No.: None	Prepared by: Resource Analysts 7/88	Scale:

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A5
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: ANCHORAGE COASTAL REFUGE & COASTAL IMPOUNDMENTS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): N/A

MOA WETLAND MAP SHEET (1982 COVERAGE): A74, A83, A91-92

MOA AERIAL PHOTO: Date 1985 Number 1-8

WETLAND OWNERSHIP: MOA X Public X Private X

ZONING: principal area is encompassed within the Anchorage Coastal Refuge; public lands are owned by the state of Alaska and managed by the Department of Fish and Game

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) X Freshwater

Current wetlands are principally comprised of unvegetated tideflats, tidal guts, and vegetated estuarine marsh with some isolated open water wetlands generally situated inland of tidal influence. The area of interest extends from approximately Point Campbell to Potter Marsh.

SOILS:

tidal deposits composed of silt, very fine sand, and clay; relative permeability is low to very low (Freethey, 1976)

Depth to water table: less than 10 feet (Freethey, et al., 1974)
Surface soil erodibility: highly erodible
(see feasibility report for the Campbell/Klatt Coastal

Impoundment for detailed evaluation of similar environment - Ott Water Engineers, 1988)

EXISTING HABITAT AND VEGETATION:

unknown

FISH AND WILDLIFE USE:

The tideflats and areas of open water marsh are utilized by waterfowl, geese, and shorebirds with the majority of use occurring during spring and fall migration. Some waterfowl and geese nesting does occur, but the availability of suitable habitat is relatively limited.

HUMAN USE:

wildlife viewing, hunting, hiking

HYDROLOGY:

Watershed: varies depending on location
Location within watershed: at mouth/estuary

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engrs, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer
Tidal influence: receives water from diurnal tidal cycle
Stream channel inflow/outflow: would require inflow from freshwater creeks and possibly some storm drain runoff
Surface runoff inflow: very little
Groundwater inflow/outflow: may have little net groundwater exchange
Storage capacity: depends on size of site

Water Quality Components:

Wetland quality: depends on water sources; probably moderate water quality improvement capacity within wetland
Pollutant sources: washoff from the steep slopes to the north may introduce sediments

SUPPLEMENTAL INFORMATION:

see feasibility report for Campbell/Klatt Coastal Impoundment for details of similar type of site

1"=500 feet MOA Zoning Maps 4, 7, 12, 17, 18, 21, 25

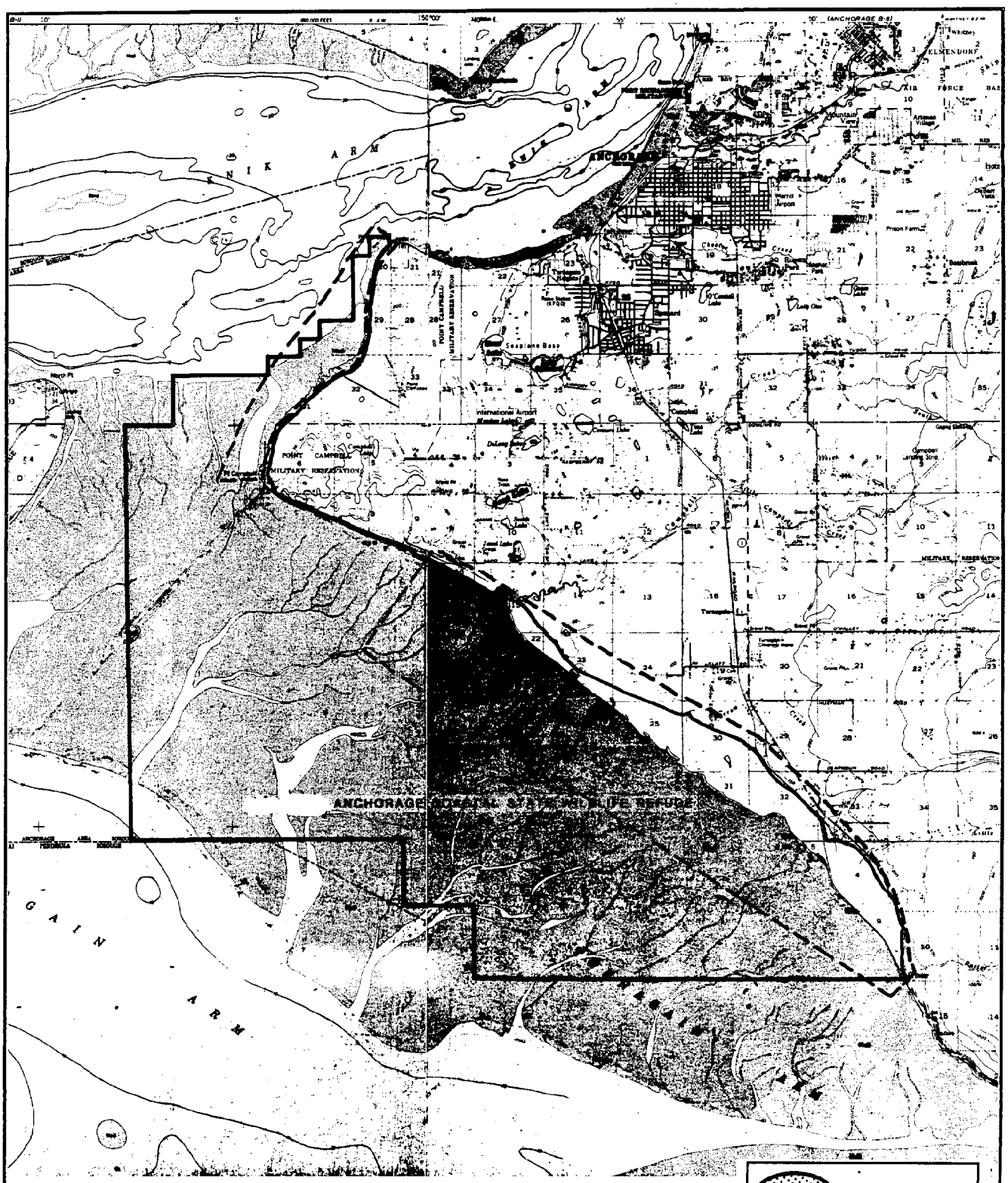
Private ownership of inholdings within the Anchorage Coastal Refuge comprise a significant portion (in excess of 170 acres) of the designated refuge lands above mean high tide.

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement ___X___ Acquisition ___X___

Evaluate acquisition of private ownership inholdings within the Anchorage Coastal Refuge to consolidate ownership, management, and potential mitigation/enhancement actions appropriate to the refuge.

Evaluate the feasibility of coastal impoundments utilizing a mix of freshwater and marine waters to develop estuarine wetlands on areas that are currently unvegetated tidelands. The Campbell/Klatt coastal impoundment currently under study is an example of the type of enhancement activity that may be feasible at other locations within the Anchorage Coastal Refuge. The principal limiting factor would appear to be the availability of freshwater input from the adjoining uplands to the east. An impoundment with open water, vegetation, islands, and a mix of shallow and deeper water parcels could provide attractive habitat for waterfowl, goose, and shorebird nesting, feeding, and migration staging.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A5	Site Name: ANCHORAGE COASTAL REFUGE	MOA Wetland No.: None	Prepared by: Resource Analysts 7/88	Scale: 1:126,720

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A6
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: KLATT BOG

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 9

MOA WETLAND MAP SHEET (1982 COVERAGE): A75-76, A83-84

MOA AERIAL PHOTO: Date 1985 Number 4, 5. 6

WETLAND OWNERSHIP: MOA _____ Public X Private X

SITE SPECIFIC WETLANDS STUDIES: Hogan and Tande, 1982; Hogan and Tande, 1983; Glass, 1986b;

ZONING: core area of wetland is mostly R1A and R2A

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

a mix of forested and open wetlands characterized as a convex patterned bog complex with bog ridges, wet hollows, and scattered bog islands and shallow ponds

SOILS:

Soils range from forest duff to peats. Underlying the surface organic material are fine-grained soil layers of varying thickness consisting of inorganic clay-silts, silts, sandy silts and silty sands. Sands predominate in the east and portions of the south. Highly frost susceptible soils are present over most of the area. The hydrologic soils group is Classification D.

Studies have revealed that peat depths ranged from 10 to 23 feet. Occasional gravel layers as well as sand and other fine-grained soils were encountered below the peat. Ground water was encountered at or near the surface of every boring. Seasonal frost was found in the upper 3 feet of 25% of the borings. No real permafrost was encountered.

Prior to construction of area roads, the soils in the area were typically moderate to high permeability alluvial deposits with significant amounts of silt and clay overlain by peat of variable depth (Freethey, 1976); may be large proportions of sand (Glass, 1986b); entire area of sand deposits underlain by silt and clay from the Bootlegger Cove Formation (Glass, 1986b); post-construction materials may reflect removal or compression of the peat and placement of relatively free draining fill

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

16 major wetland vegetation types identified and mapped (Hogan and Tande, 1982); range from small permanent ponds in the northcentral part of the bog to graminoid wet meadow to closed forest; study includes detailed description of dominant plants, evidence of frost activity, soils, soil moisture, seasonal water conditions

string bogs occur in the north and central portions of the area, and forested bog swamp occurs in the northeastern and northwestern quadrants; bog ridges and wet hollow make up the string bog complex and are oriented perpendicular to water flow

birch, black spruce, shrubs, grasses, sedges, and moss; near Paxson/Campbell property, drier site with birch, labrador tea, some white spruce saplings; vegetation type descriptions are complicated by old drainage ditches which have altered at least the south half of the bog

FISH AND WILDLIFE USE:

mallard, sandhill crane, coyotes, snowshoe hare, red fox, moose, spruce grouse, northern shrike, lapland longspur, red-backed vole, dusky shrew, masked shrew, and short-tailed weasel; near Concord Hill pond, moose and geese (nesting occurs here), bald eagle, northern harrier

38 species of birds have been observed at Klatt Bog with the greatest species richness during the breeding season; 15 species have been reported to nest in the area; Klatt Bog does not attract migrating waterfowl or shorebirds in the numbers found on nearby coastal flats or Potters Marsh; Hudsonian godwits are present during spring migration and the summer; bird numbers and species use are generally low during the fall with reduced bird presence and activity after August 15th

HUMAN USE:

open space, wildlife viewing, hiking, cross country skiing; provides public education function

HYDROLOGY:

no major surface input; most important for storm storage and flood hazard reduction; it is assumed that water movement near subsurface and surface follows the contour lines; natural drainage appears to be west/southwest; part of the bog once drained toward Campbell Lake, and a portion may presently drain into Bayshore Lake; most of the area presently appears to drain to the southwest toward the ocean bluffs (Hogan and Tande, 1982); probable drying trend due to ditching and reduced water input.

Watershed: contributes to Bayshore Lake and directly to Turnagain Arm
Location within watershed: wetland constitutes majority of watershed

Water Balance Components:
Mean annual precipitation: about 15 inches (Glass, 1986b); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: very little stream inflow; stream outflow is in several channels
Surface runoff inflow: minor amounts
Groundwater inflow/outflow: groundwater flow is generally from east to west; there is a net groundwater inflow to the site in significant amounts
Storage capacity: very large storage in its 2.3 square miles

Water Quality Components:
Wetland quality: dissolved solids less than 500 mg/l, yellowish brown color, some samples of relatively high iron and manganese concentrations, main ions of calcium and bicarbonate (Glass, 1986b); probably substantial water quality improvement capacity within wetland
Pollutant sources: washoff from adjacent roads and development may introduce sediments and other pollutants

Comments: see USGS report (Glass, 1986b)

SUPPLEMENTAL INFORMATION:

1"=100 feet MOA Maps 2527,2528, 2529, 2530, 2626, 2627, 2628, 2629, 2630, 2728, 2729

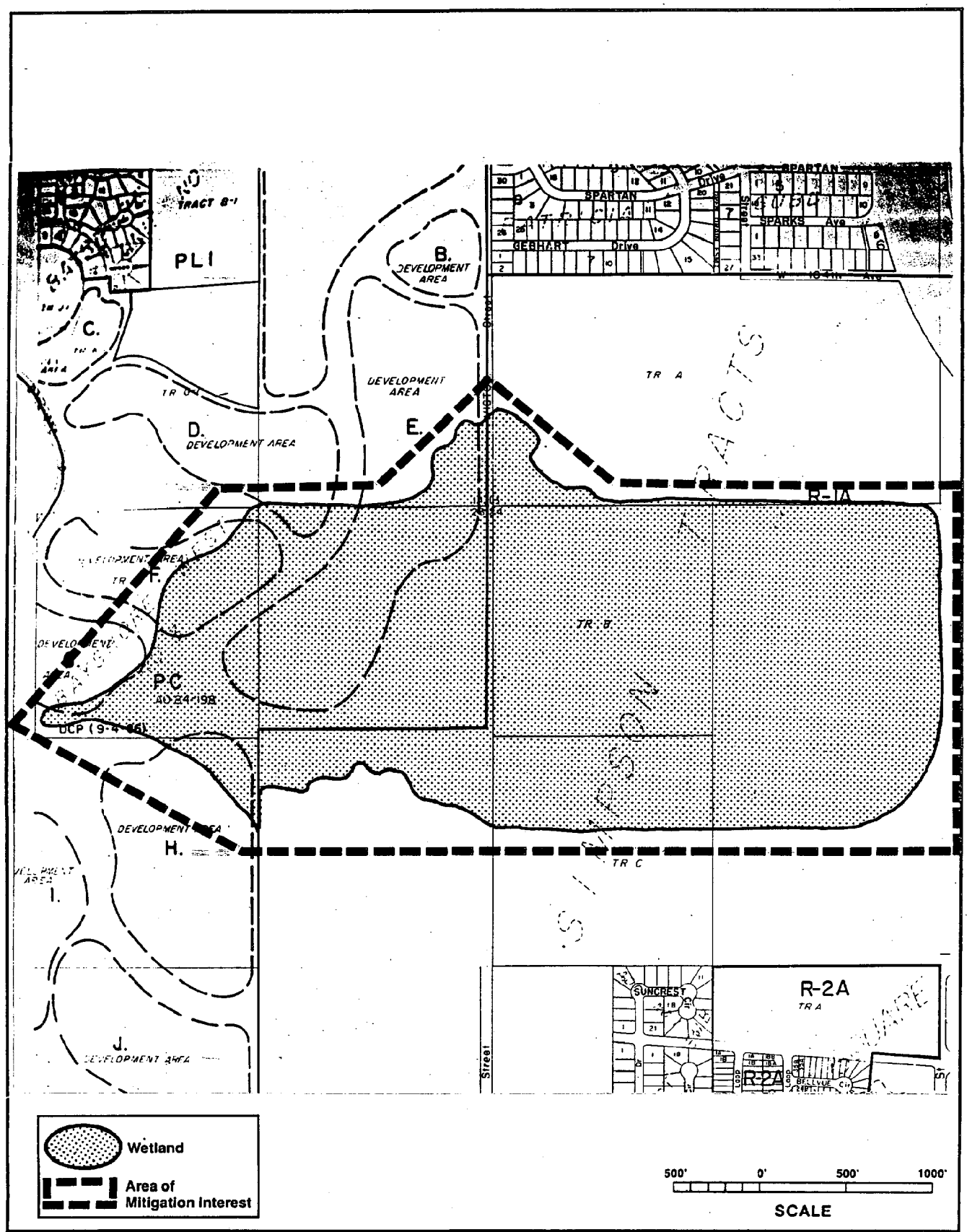
1"=500 feet MOA Zoning Maps 17, 18

POTENTIAL MITIGATION ACTIONS:

Restoration X Enhancement X Acquisition X

Central sections of the southwest wetlands, especially BLM lands south of O'Malley, are recognized as critical wildlife habitats. Cumulative impacts from infrastructure and development have altered the bog's fringes and hydrologic regime.

Save the core habitat (bog ridges and wet hollows) and fill drainage ditches that have reduced water table; construct depressions to create open water habitat; private ownership lands have been identified by MOA as acquisition priority for USFWS Wetlands Concept Plan



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A6	Site Name: KLATT BOG	MOA Wetland No.: 9	Prepared by: Resource Analysts 7/88	Scale:

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A7
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: O'MALLEY/C STREET WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): N/A

MOA WETLAND MAP SHEET (1982 COVERAGE): A77

MOA AERIAL PHOTO: Date 1985 Number 6-4, 6-5, 7-8

WETLAND OWNERSHIP: MOA _____ Public X Private _____

ZONING: I-2 (Heavy Industrial), T (Transition District)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

wetland is not natural but created by construction activities associated with O'Malley and C Street development; wetland is principally open water pond with poorly developed margins

SOILS:

prior to construction of the roads, the soils in the area were typically moderate to high permeability alluvial deposits with significant amounts of silt and clay overlain by peat of variable depth (Freethey, 1976); may be large proportions of sand (Glass, 1986b); entire area of sand deposits underlain by silt and clay from the Bootlegger Cove Formation (Glass, 1986b); post-construction materials may reflect removal or compression of the peat and placement of relatively free draining fill

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

man-made open water pond with poorly developed, but increasing, shoreline fringe wetland; vegetation present includes Carex sp. and rushes.

FISH AND WILDLIFE USE:

Provides resting and nesting habitat for waterfowl in the spring; ducks are present whenever open water is available.

HUMAN USE:

high visibility to public using O'Malley and C Street area; wildlife viewing, open space

HYDROLOGY:

appears to be enclosed wetland with only discernible surface inflow from culverts under roadway embankment; input is mainly from drainage-collecting culverts under O'Malley Road; drainage is from south to north.

Watershed: Klatt Bog
Location within watershed: headwaters

Water Balance Components:
Mean annual precipitation: about 15 inches (Glass, 1986b); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: possible culvert connections to allow inflow and/or outflow, but must be verified
Surface runoff inflow: negligible
Groundwater inflow/outflow: groundwater flow direction generally from east to west; there may be a net groundwater outflow from the site contributing to groundwater inflow to Klatt Bog
Storage capacity: very little storage

Water Quality Components:
Wetland quality: unknown; probably minimal water quality improvement capacity within wetland
Pollutant sources: washoff from adjacent roads may introduce sediments and other pollutants

SUPPLEMENTAL INFORMATION:

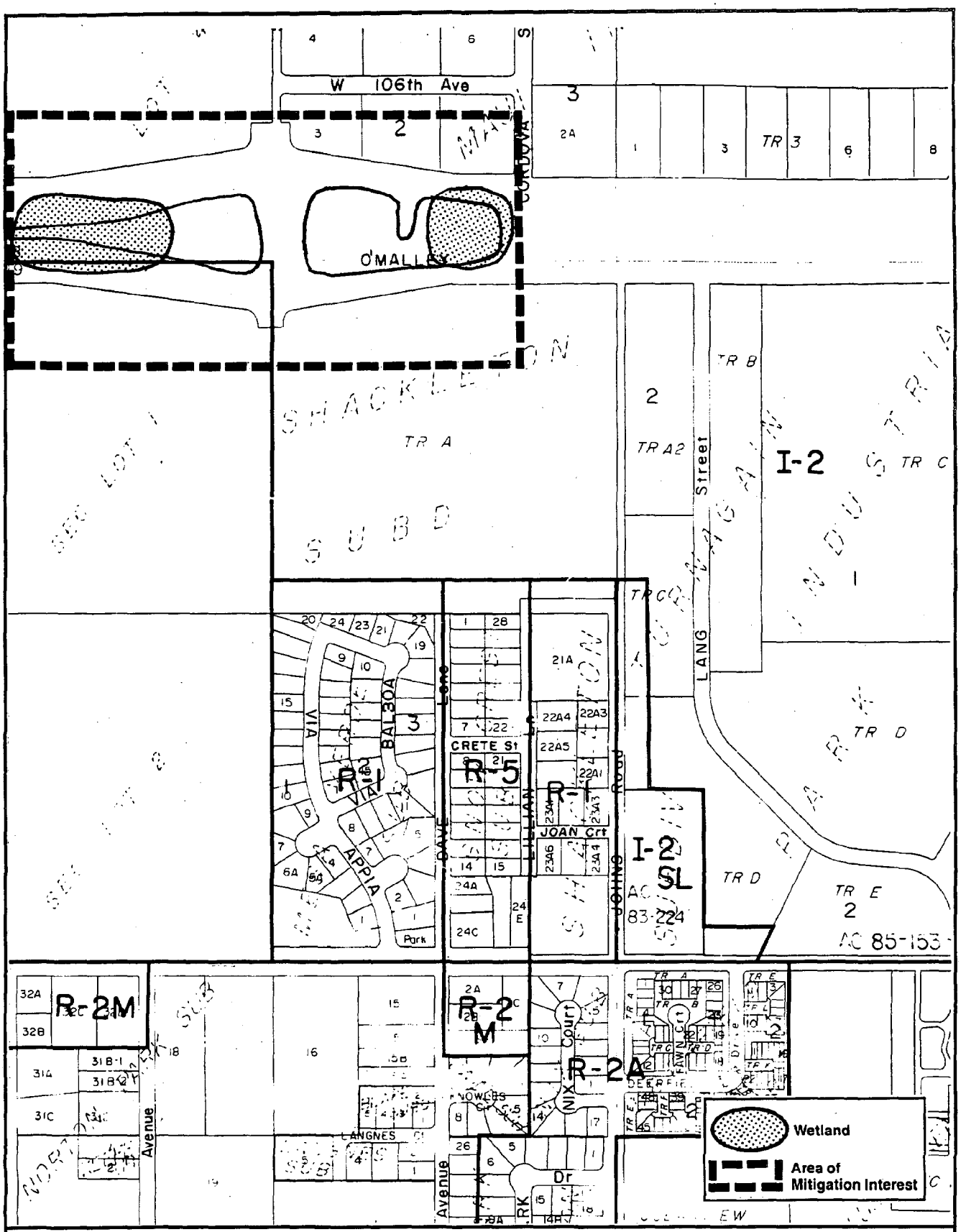
appears to be within the ADOT/PF right-of-way

1"=100 feet MOA Maps 2530,2630

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement ___X___ Acquisition _____

The function and productivity of the developing wetland could be enhanced by stabilizing clean water input, encouraging revegetation of pond margins with suitable plants, modifying pond depth and shoreline configuration, and creating vegetated nesting islands. If dredging is considered, such activity would have to be scheduled during periods of minimal bird use.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A7	Site Name: O'MALLEY/C STREET WETLANDS	MOA Wetland No.: None	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A8
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: FURROW CREEK/ TANAGA TERRACE WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 26A

MOA WETLAND MAP SHEET (1982 COVERAGE): A93

MOA AERIAL PHOTO: Date 1985 Number 7-4, 7-5, 7-6, 8-5, 8-6

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: T (Transition District), R-1A (1 Family Residential, large lot), R-7 (Intermediate Rural Residential District)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

riparian wetlands with direct hydrologic link to Furrow Creek

SOILS:

The soils in the area are typically high to very high permeability alluvial deposits (Freethey, 1976).

Depth to water table: may be near surface
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

unknown

FISH AND WILDLIFE USE:

moose overwintering habitat; freshwater bird use, particularly at east end of the wetland

HUMAN USE:

open space, wildlife viewing

HYDROLOGY:

Watershed: Furrow Creek
Location within watershed: adjacent to stream channel in midsection of watershed; mostly dry above Pintail Drive

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: Furrow Creek is a major water source
Surface runoff inflow: probably receives moderate input
Groundwater inflow/outflow: groundwater flow direction probably from east to west; there may be a net groundwater inflow to the site
Storage capacity: moderate storage; sufficient to modify Furrow Creek flows downstream

Water Quality Components:

Wetland quality: unknown; probably substantial water quality improvement capacity within wetland
Pollutant sources: washoff from adjacent roads and residential areas may introduce sediments and other pollutants

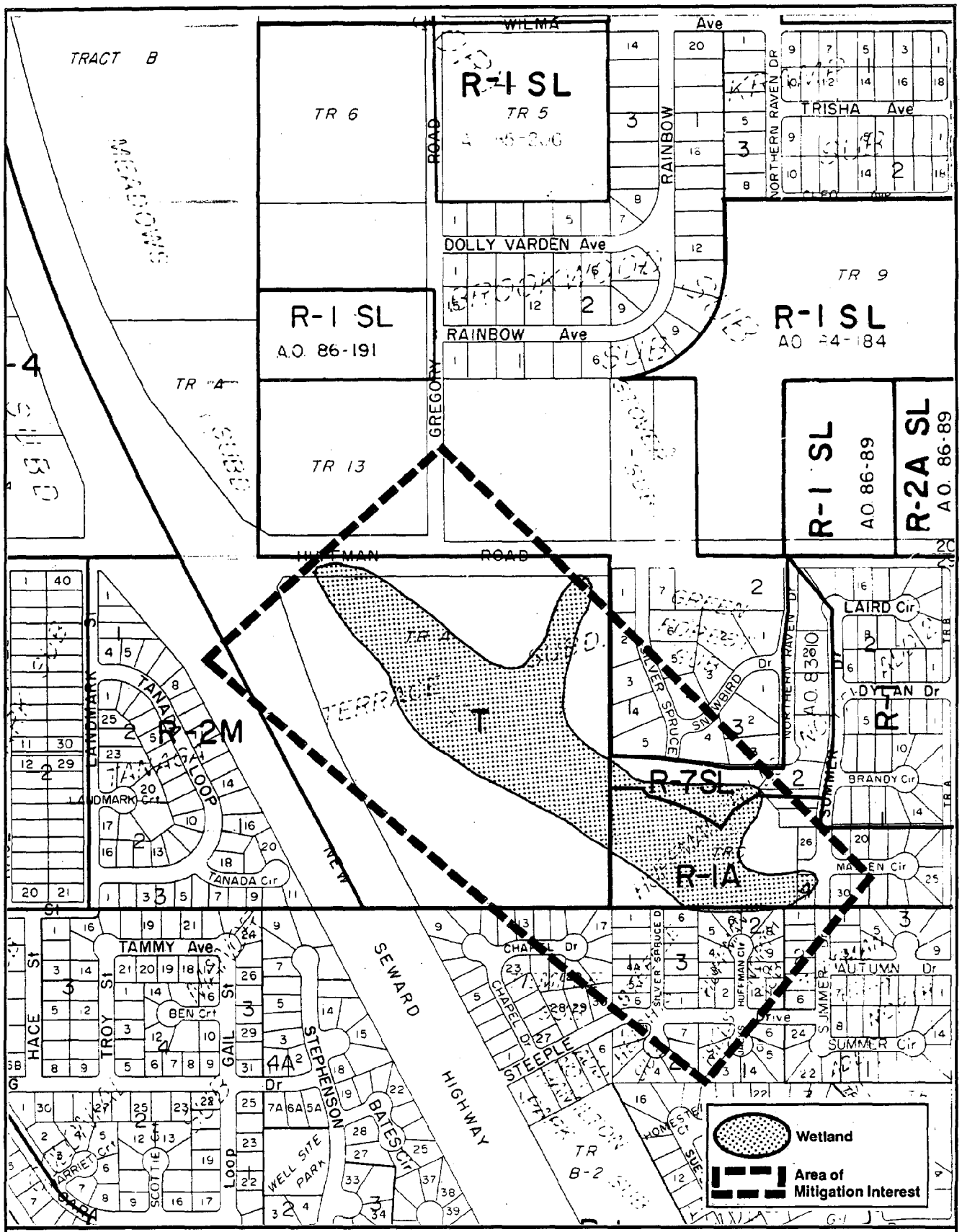
SUPPLEMENTAL INFORMATION:

1"=100 feet MOA Maps 2833, 2834

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement _____ Acquisition ___X___

The wetland should remain undisturbed; acquisition should be evaluated.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A8	Site Name: FURROW CREEK/TANAGA TERRACE WETLANDS	MOA Wetland No.: 26A	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A9
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: MOOSE MEADOWS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 26

MOA WETLAND MAP SHEET (1982 COVERAGE): A86

MOA AERIAL PHOTO: Date 1985 Number 7-6,7-7,8-6,8-7

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: T (Transition District), R-1 SL (1 Family Residential with Special Limitations), R-7 SL (Intermediate Rural Residential District with Special Limitations), R-6 (Suburban Residential District, Large Lot)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

riparian wetland tributary to Furrow Creek

SOILS:

The soils in the area are typically moderate to low permeability lake and pond deposits of silt, clay and fine sand overlain by peat (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

Near Church of God: birch, large white spruce; Near frontage road: very wet with aquatic vegetation; In middle: shrubby cinquefoil; Near Baptist fill: spruce

FISH AND WILDLIFE USE:

winter browse area for moose; waterbird nesting habitat in the southern portion

HUMAN USE:

open space, wildife viewing, hiking, cross country skiing

HYDROLOGY:

hydrological connection to Furrow Creek; low-lying central corridor of the wetland complex provides water quality, recharge, and flood storage functions

Watershed: Furrow Creek
Location within watershed: adjacent to tributary stream channel in midsection of watershed

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: tributary creek is a major water source with a moderate drainage basin north of O'Mally Road
Surface runoff inflow: probably receives moderate input
Groundwater inflow/outflow: groundwater flow direction may generally be from east to west; there may be a net groundwater inflow to the site
Storage capacity: moderate storage; sufficient to modify Furrow Creek flows downstream

Water Quality Components:

Wetland quality: unknown; probably substantial water quality improvement capacity within wetland
Pollutant sources: washoff from adjacent fill at the church, roads, and residential areas may introduce sediments and other pollutants

SUPPLEMENTAL INFORMATION:

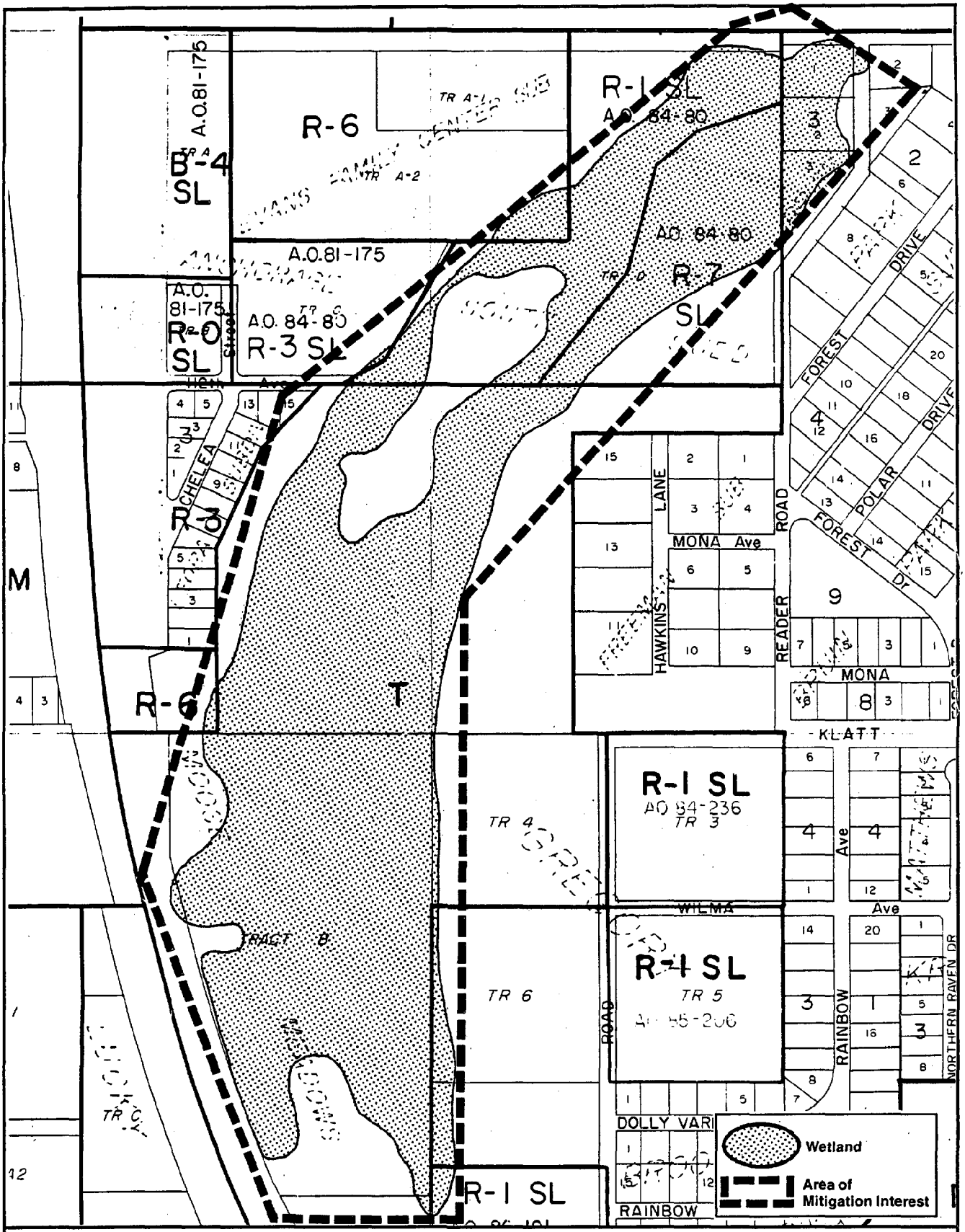
encroachment by Baptist Church near O'Malley; ditching and dewatering has occurred in the interior portion of the wetland

1"=100 feet MOA Map 2732

POTENTIAL MITIGATION ACTIONS:

Restoration ___X___ Enhancement _____ Acquisition ___X___

Natural drainage pattern should be re-established. Ditching should be filled or blocked. Acquisition should be considered.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A9	Site Name: MOOSE MEADOWS	MOA Wetland No.: 26	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A10
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: SPRUCE STREET / E. 80TH AVENUE WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 19A

MOA WETLAND MAP SHEET (1982 COVERAGE): A70

MOA AERIAL PHOTO: Date 1985 Number 8-11, 8-12

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: R-2M (Multiple Family Residential District)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

shallow lake with limited wetland development along lake margin; South Branch of North Fork Little Campbell Creek passes through the lake

SOILS:

The soils in the area are typically high to very high permeability alluvial sandy gravel deposits overlain by peat (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: may be moderate

EXISTING HABITAT AND VEGETATION:

limited lake margin wetland development near inlet (east side lake), also at west end (not near outlet)

FISH AND WILDLIFE USE:

The lake provides rearing habitat for juvenile coho salmon, king salmon, and Dolly Varden (ADF&G Anadromous Stream Catalog).

HUMAN USE:

functions as a neighborhood park; some swimming activity; Abbott Loop Community Council has proposed acquisition by the MOA and addition to park system; wildlife viewing, open space

HYDROLOGY:

The lake and wetlands are part of the South Branch of North Fork Little Campbell Creek. Some ditching may have occurred in the area to the north to reduce the water table in the vicinity of private residences. The lake is important for water quality, flood storage/ desynchronization functions in North Fork Little Campbell Creek. Water quality degrades in stream channel immediately below lake outlet.

Watershed: South Branch North Fork Little Campbell Creek
Location within watershed: on and adjacent to stream channel; lake may have originally been a gravel pit

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: South Branch, North Fork Little Campbell Creek is a major water source with a moderate drainage basin upstream
Surface runoff inflow: may receive moderate input
Groundwater inflow/outflow: groundwater flow direction may generally be from east to west; there may be a net groundwater inflow to the site
Storage capacity: moderate storage; sufficient to modify creek flows downstream

Water Quality Components:

Wetland quality: unknown; probably moderate water quality improvement capacity within wetland
Pollutant sources: washoff from nearby roads and residential areas may introduce sediments and other pollutants

SUPPLEMENTAL INFORMATION:

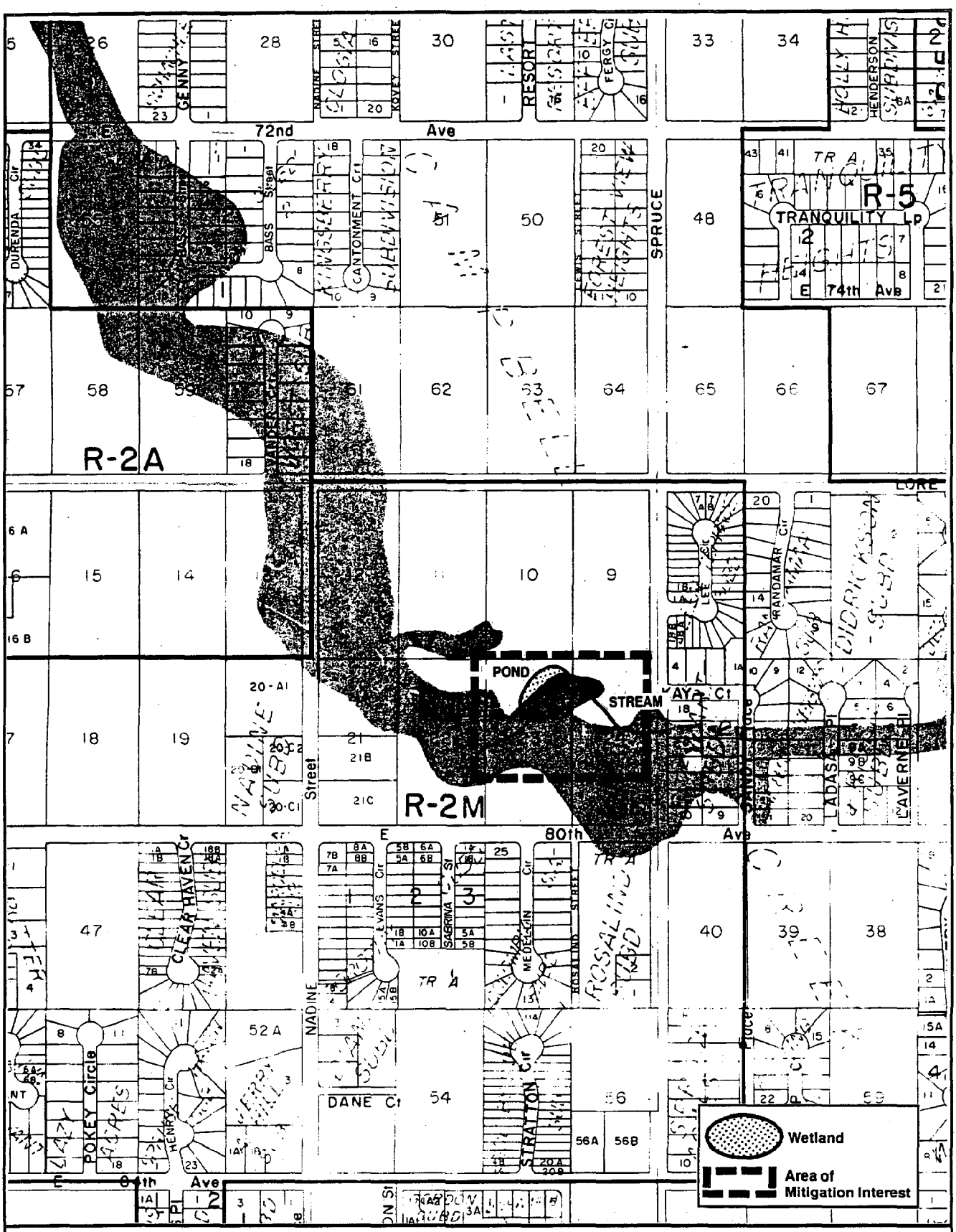
The lake has been in existence for at least 20 years. It has been diminished in size due to some filling activity for construction of Snowview subdivision. An unvegetated man-made berm exists along the north shore of lake. There is substantial community support for establishing a park.

1"=100 feet MOA Maps 2035, 2135

POTENTIAL MITIGATION ACTIONS:

Restoration ___X___ Enhancement ___X___ Acquisition ___X___

restore riparian wetland vegetation to dewatered areas; evaluate filling of ditches or water control structures to restore water table; possible enhancement of wetlands and open water to encourage use by waterbirds for nesting and feeding; potential to improve rearing habitat for juvenile salmonids; maintain connection with South Branch, North Fork Little Campbell Creek and protect water quality.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A10	SPRUCE STREET/ Site Name: E. 80TH AVE. WETLANDS	MOA Wetland No.: 19A	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A11
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: N.F.LITTLE CAMPBELL CREEK, E. 72ND & SPRUCE STREET

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 19A

MOA WETLAND MAP SHEET (1982 COVERAGE): A57

MOA AERIAL PHOTO: Date 1985 Number 8-11,8-12

WETLAND OWNERSHIP: MOA X Public _____ Private X

ZONING: R-1 (1 Family Residential District)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

riparian wetlands along N.F. Little Campbell Creek east of Spruce Street and north of E. 72nd Avenue; high water table, limited open water areas

SOILS:

The soils in the area are typically high to very high permeability alluvial sandy gravel deposits overlain by peat (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

unknown

FISH AND WILDLIFE USE:

waterbird use areas, limited use by moose during winter; North Fork Little Campbell provides rearing habitat for juvenile king and coho salmon, Dolly Varden upstream into Campbell Tract

HUMAN USE:

open space, wildlife viewing, cross country skiing

HYDROLOGY:

Watershed: South Branch North Fork Little Campbell Creek
Location within watershed: on and adjacent to stream channel

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: South Branch, North Fork Little Campbell Creek is a major water source with a moderate drainage basin upstream
Surface runoff inflow: may receive moderate input
Groundwater inflow/outflow: groundwater flow direction may generally be from east to west; there may be a net groundwater inflow to the site
Storage capacity: little to moderate storage; may be sufficient to modify creek flows downstream

Water Quality Components:

Wetland quality: unknown; probably moderate water quality improvement capacity within wetland
Pollutant sources: washoff from nearby roads and residential areas may introduce sediments and other pollutants

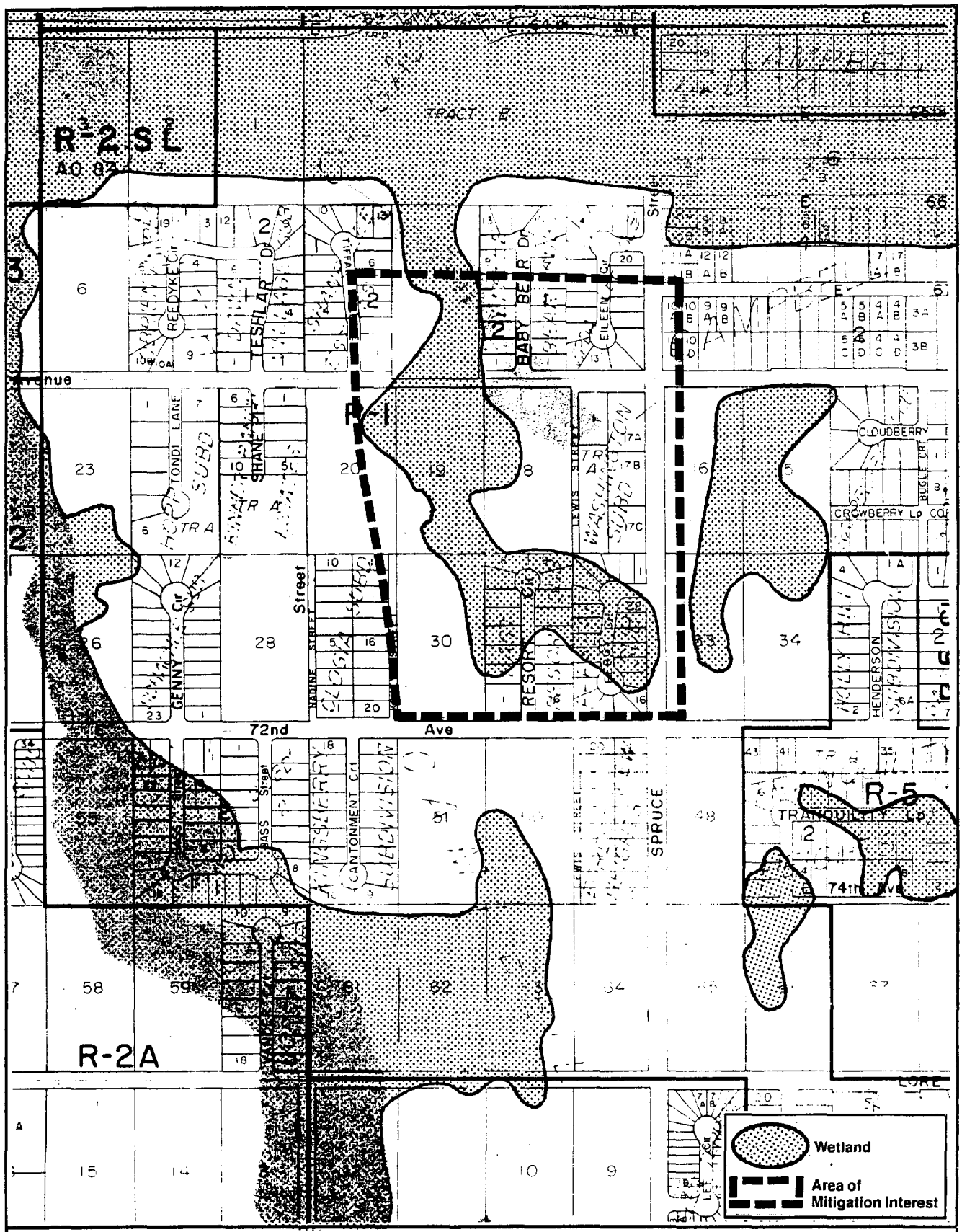
SUPPLEMENTAL INFORMATION:

none

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement __X__ Acquisition _____

evaluate potential for construction of shallow open water ponds and swales in riparian wetlands to enhance habitat for use by water birds; consider feasibility of some channel connection to North Fork Little Campbell Creek to provide access to wetlands for rearing salmonids



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A11	Site Name: WETLANDS AT 72ND AVE. AND SPRUCE STREET	MOA Wetland No.: 19A	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A12
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: WETLANDS NORTH OF TIFFANY TERRACE

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 19A

MOA WETLAND MAP SHEET (1982 COVERAGE): A57

MOA AERIAL PHOTO: Date 1985 Number 8-12, 8-13

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: R-2 SL (Multiple Family Residential - Special Limitations)
R-1 (1 Family Residential), R-3 SL (Multiple Family Residential - Special Limitations)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

Riparian wetlands north of N.F. Little Campbell appear hydrologically connected to creek. These are open wetlands which are becoming drier due to past dewatering via ditches.

SOILS:

The soils in the area are typically moderate to high permeability alluvial deposits with significant amounts of silt, clay and fine sand overlain by peat (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

unknown

FISH AND WILDLIFE USE:

limited waterbird use; rearing coho and king salmon and Dolly Varden

HUMAN USE:

wildlife viewing, open space

HYDROLOGY:

Watershed: North Branch, North Fork Little Campbell Creek
Location within watershed: within tributary basin

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: minor amounts of intermittent flow may occur at this site as channel or surface runoff with a small drainage basin upstream
Surface runoff inflow: may receive minor input
Groundwater inflow/outflow: groundwater flow direction may generally be from east to west; there may be a net groundwater inflow to the site
Storage capacity: little to moderate storage; may be sufficient to modify creek flows downstream

Water Quality Components:

Wetland quality: unknown; probably moderate water quality improvement capacity within wetland
Pollutant sources: unknown

SUPPLEMENTAL INFORMATION:

1"=100 feet MOA Map 2034

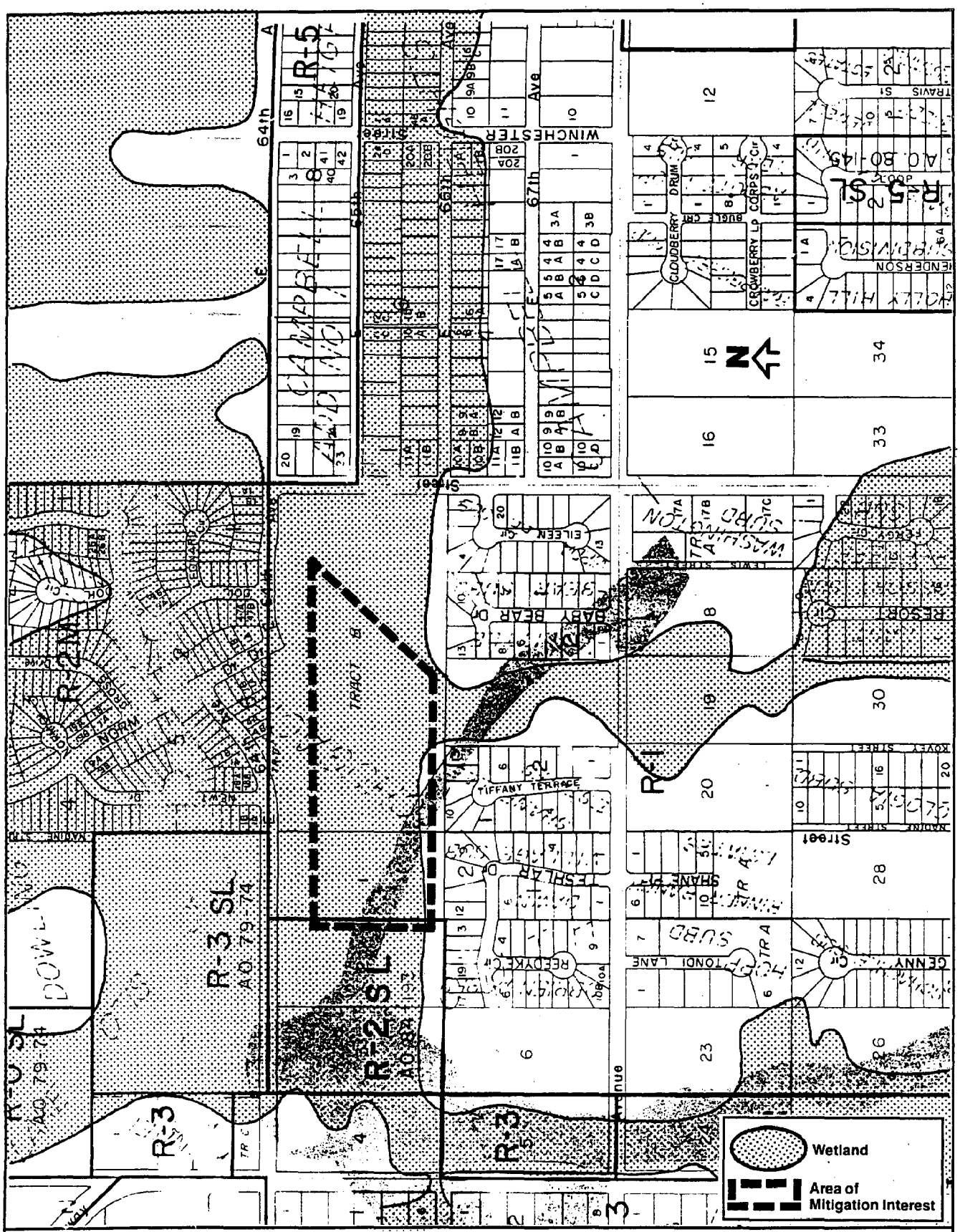
sedimentation basin has been discussed for this general area, engineered by J.M. Montgomery Engineers

strong sewage odor near N.E. corner Shane Lee Estates subdivision; evidence of excavated drainage ditches into N.F. Little Campbell Creek which may have lowered the wetland water table.

POTENTIAL MITIGATION ACTIONS:

Restoration ___X___ Enhancement ___X___ Acquisition _____

evaluate wetland restoration by filling or blocking excavated ditches to restore water table in wetlands; evaluate potential for shallow excavations once water table is restored to enhance open water habitat for waterbirds; evaluate potential connection of open water areas to N.F. Little Campbell Creek to enhance rearing areas for coho and king salmon and Dolly Varden



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A12	Site Name: NORTH OF TIFFANY TERRACE	MOA Wetland No.: 19A	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A13
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: TIFFANY TERRACE/BABY BEAR WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 19A

MOA WETLAND MAP SHEET (1982 COVERAGE): A57

MOA AERIAL PHOTO: Date 1985 Number 8-12, 8-13

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: R-2 SL (Multiple Family Residential - Special Limitations)
R-1 (1 Family Residential), R-3 SL (Multiple Family Residential - Special Limitations)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

riparian wetlands adjoining N.F. Little Campbell Creek; limited open water areas, high water table

SOILS:

The soils in the area are typically moderate to high permeability alluvial deposits with significant amounts of silt, clay and fine sand overlain by peat (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

unknown

FISH AND WILDLIFE USE:

occasional use by moose; limited waterbird use; juvenile coho and king salmon and Dolly Varden rear in North Fork Campbell Creek

HUMAN USE:

wildlife viewing, open space

HYDROLOGY:

Watershed: North Branch, North Fork Little Campbell Creek
Location within watershed: within tributary basin

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: minor amounts of intermittent flow may occur at this site as channel or surface runoff with a small drainage basin upstream
Surface runoff inflow: may receive minor input
Groundwater inflow/outflow: groundwater flow direction may generally be from east to west; there may be a net groundwater inflow to the site
Storage capacity: little to moderate storage; may be sufficient to modify creek flows downstream

Water Quality Components:

Wetland quality: unknown; probably moderate water quality improvement capacity within wetland
Pollutant sources: none identified

SUPPLEMENTAL INFORMATION:

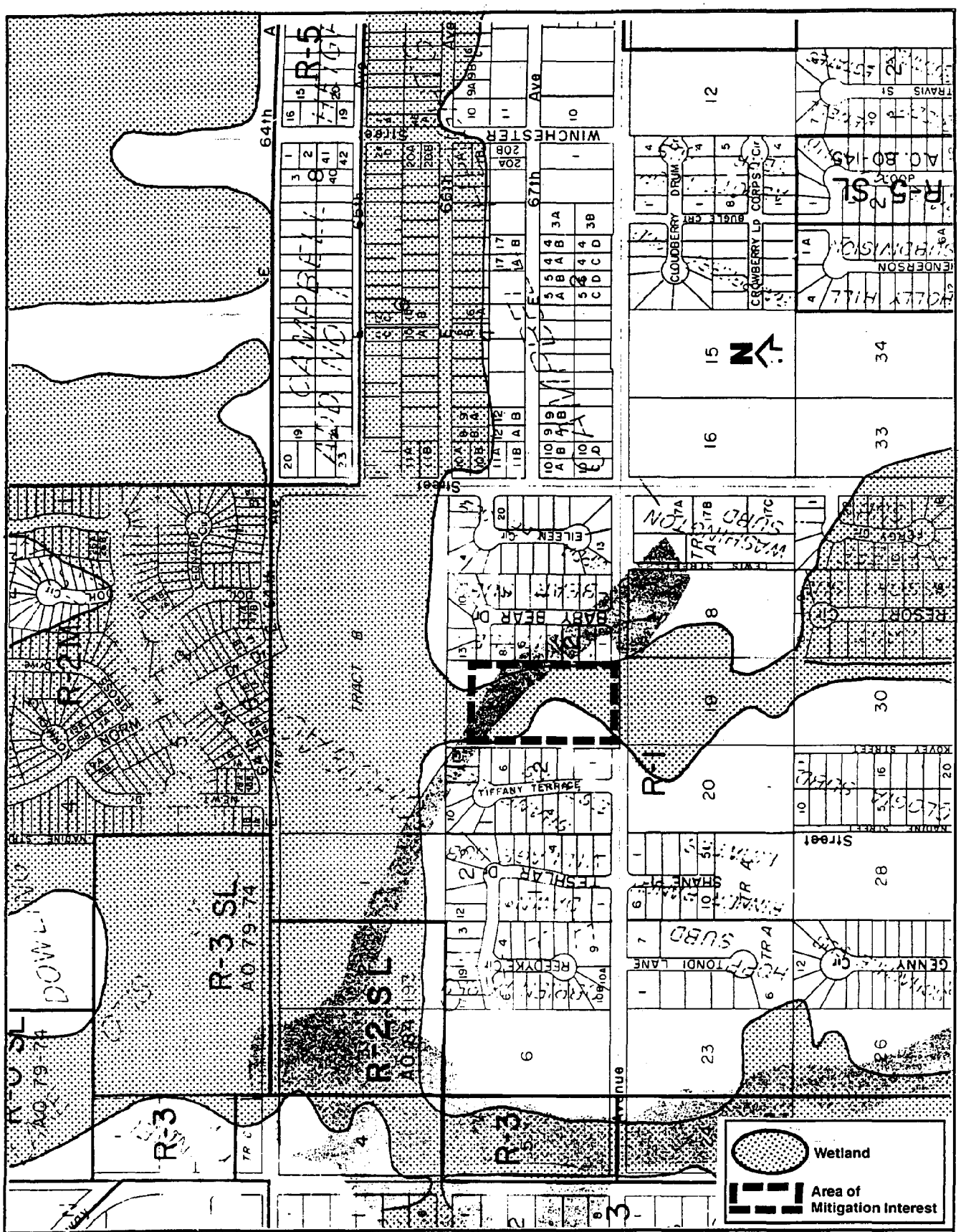
sedimentation basin has been discussed for this general area, engineered by J.M. Montgomery Engineers

1"=100 feet MOA Map 2034

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement __X__ Acquisition _____

maintain wetland functions and flow integrity into N.F. Little Campbell; evaluate potential for enhancement of waterbird use and rearing by juvenile salmonids through development of shallow open water areas connected to the stream



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A13	Site Name: TIFFANY TERRACE/ BABY BEAR WETLANDS	MOA Wetland No.: 19A	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A14
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: O'BRIEN STREET/E. 68TH STREET WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 19A

MOA WETLAND MAP SHEET (1982 COVERAGE): A56

MOA AERIAL PHOTO: Date 1985 Number 7-12, 7-13

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: unknown

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

wetland description unknown

SOILS:

The soils in the area are typically moderate to high permeability alluvial deposits with significant amounts of silt, clay and fine sand overlain by peat (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

Unknown

FISH AND WILDLIFE USE:

Unknown

HUMAN USE:

open space, wildlife viewing

HYDROLOGY:

Watershed: South Branch, North Fork Little Campbell Creek
Location within watershed: on and adjacent to South Branch, North Fork Little Campbell Creek in lower portion of basin, just upstream of confluence with North Branch

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: significant inflow and outflow from South Branch, North Fork Little Campbell Creek with a large drainage basin upstream; long culvert upstream restricts flow, reducing flood storage function of this wetland and deflecting flow into North Branch during periods of high flow
Surface runoff inflow: receives minor input from local area
Groundwater inflow/outflow: groundwater flow direction may generally be from east to west; there may be a net groundwater outflow from the site
Storage capacity: minor storage; minor effect on creek flows downstream

Water Quality Components:

Wetland quality: unknown; probably minor water quality improvement capacity within wetland
Pollutant sources: significant pollution source is parking lot to the east

Comments: Stream restoration (engineered by DOWL) has been discussed for this general area. This site would be abandoned and the stream rerouted upstream of this point, effectively dewatering the site which is marginally wetted at this time.

SUPPLEMENTAL INFORMATION:

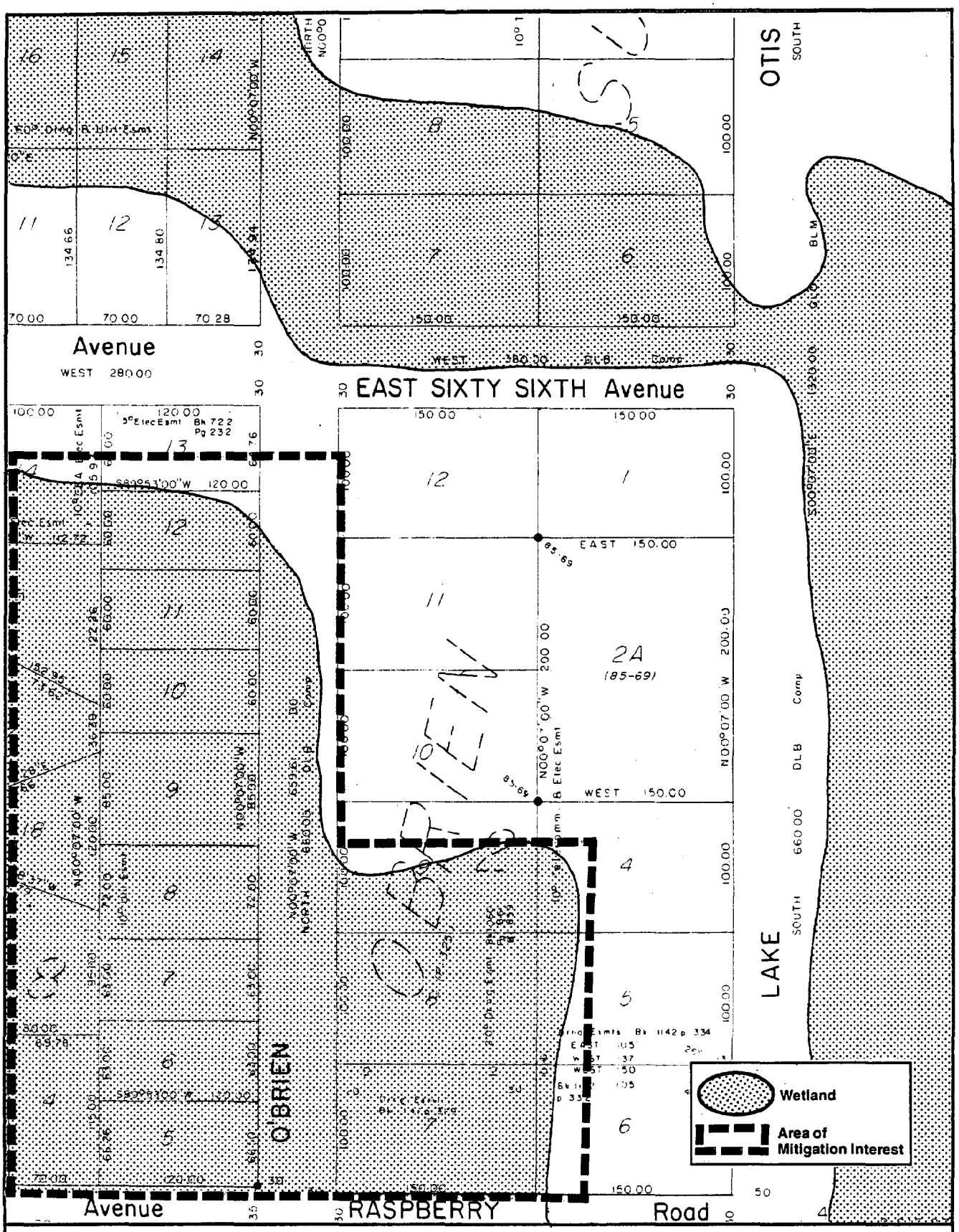
ADF&G has indicated that this area has good rearing habitat for juvenile salmonids

1"=100 feet MOA Map 2133

POTENTIAL MITIGATION ACTIONS:

Restoration ___X___ Enhancement _____ Acquisition _____

The wetland may have been dewatered following installation of MOA sewer line (porous gravel backfill, drainage of wetland water along pipeline); restore wetland water table by installation of ditch plugs or impermeable material around the sewer line in the pipe trench (bentonite or similar material)



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A14	Site Name: O'BRIEN ST./E. 68TH ST. WETLANDS	MOA Wetland No.: 19A	Prepared by: Resource Analysts 7/88	Scale: 1"=100'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A15
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: EAST OF LAKE OTIS DRIVE & NORTH OF E. 68TH AVENUE

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 19A

MOA WETLAND MAP SHEET (1982 COVERAGE): A57

MOA AERIAL PHOTO: Date 1985 Number 8-12, 8-13

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: B-3 (General and Strip Commercial Business Development)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

upstream from Lake Otis Drive east of Tesoro Station; isolated pond with wetland fringe floods from North Fork Little Campbell Creek at breakup

SOILS:

The soils in the area are typically moderate to high permeability alluvial deposits with significant amounts of silt, clay and fine sand overlain by peat (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

unknown

FISH AND WILDLIFE USE:

some use by waterbirds in spring

HUMAN USE:

open space, wildlife viewing

HYDROLOGY:

Watershed: North Fork Little Campbell Creek
Location within watershed: between North and South Branches a short distance upstream from confluence

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: no direct channel inflow, but North (maybe) and South Branches occasionally flood the area
Surface runoff inflow: receives minor input from very small area near pond
Groundwater inflow/outflow: groundwater flow direction may generally be from east to west; there may be a net groundwater outflow from the site
Storage capacity: little storage; may be sufficient to modify creek flows downstream

Water Quality Components:

Wetland quality: unknown; probably moderate water quality improvement capacity within wetland
Pollutant sources: adjacent roads may contribute sediments and other pollutants

Comments: very small pond at this site; wetland is threatened by recent excavation of North Branch Little Campbell Creek to match invert of new culvert under Lake Otis Drive

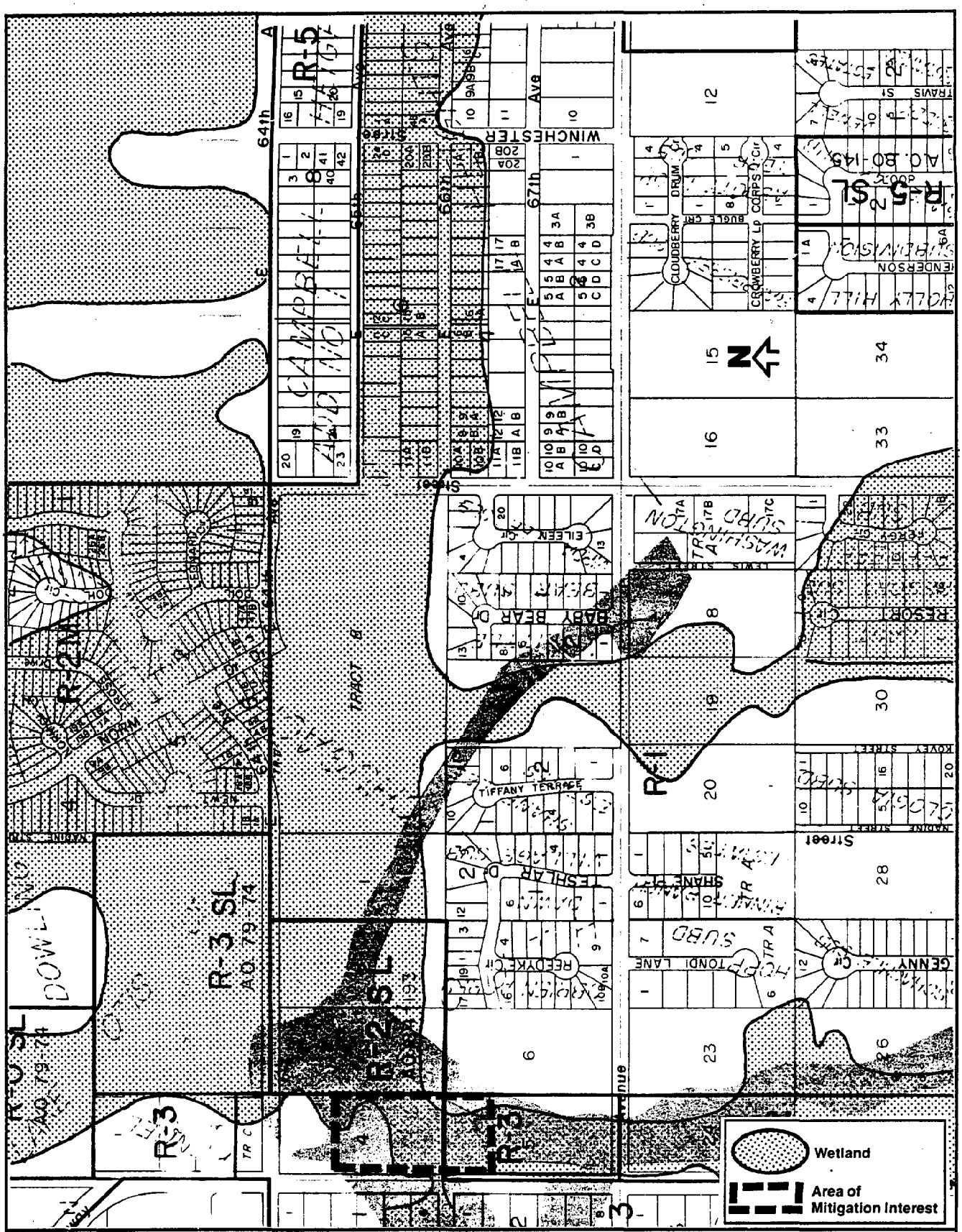
SUPPLEMENTAL INFORMATION:

1"=100 feet MOA Map 3024

POTENTIAL MITIGATION ACTIONS:

Restoration ___X___ Enhancement ___X___ Acquisition _____

maintain hydrological connection of wetland to N.F. Campbell Creek (key is maintaining the integrity and functioning of the pond habitat); evaluate potential enhancement of the wetland habitat for use by rearing juvenile salmonids and nesting waterbirds; provide access for coho and king salmon and Dolly Varden juveniles to pond and shallow water wetland



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A15	Site Name: E. OF LAKE OTIS PKWY. & N. OF E. 68TH AVE.	MOA Wetland No.: 19A	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A16
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: TINA LAKE WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 12A

MOA WETLAND MAP SHEET (1982 COVERAGE): A43, A54-55

MOA AERIAL PHOTO: Date 1985 Number 6-9

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: I-1 (Light Industrial District)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

wetlands adjoin perimeter of open water Tina Lake

SOILS:

The soils in the area are typically moderate to high permeability alluvial deposits with significant amounts of silt, clay and fine sand overlain by peat (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:
open water pond; emergent sedges and grasses, alder, and willow along south shore

FISH AND WILDLIFE USE:

wildlife habitat values for waterbirds relatively high; mallards, geese, gulls; some waterbird nesting

HUMAN USE:

wildlife viewing, open space, walking, hiking

HYDROLOGY:

adjoining wetlands important to water quality of Tina Lake; local drainage problems present to the east; NE portions of wetlands have direct connections to the lake

Watershed: Campbell Creek
Location within watershed: tributary basin

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engrs, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: no significant direct channel inflow apparent
Surface runoff inflow: receives inflow from area near lake *
Groundwater inflow/outflow: groundwater flow direction may generally be from east to west; there may be a net groundwater outflow from the site
Storage capacity: moderate storage; may be sufficient to modify creek flows downstream

Water Quality Components:

Wetland quality: unknown; probably moderate water quality improvement capacity within wetland
Pollutant sources: adjacent roads and development may contribute sediments and other pollutants

SUPPLEMENTAL INFORMATION:

The northeast portion of wetland is currently being filled (June 1988). MOA Wetlands Management Plan requires a setback of 65 ft from mean high water. It appears that the water level is being artificially lowered, thereby changing the boundary. At present, only the wetlands along south end of lake have not been disturbed.

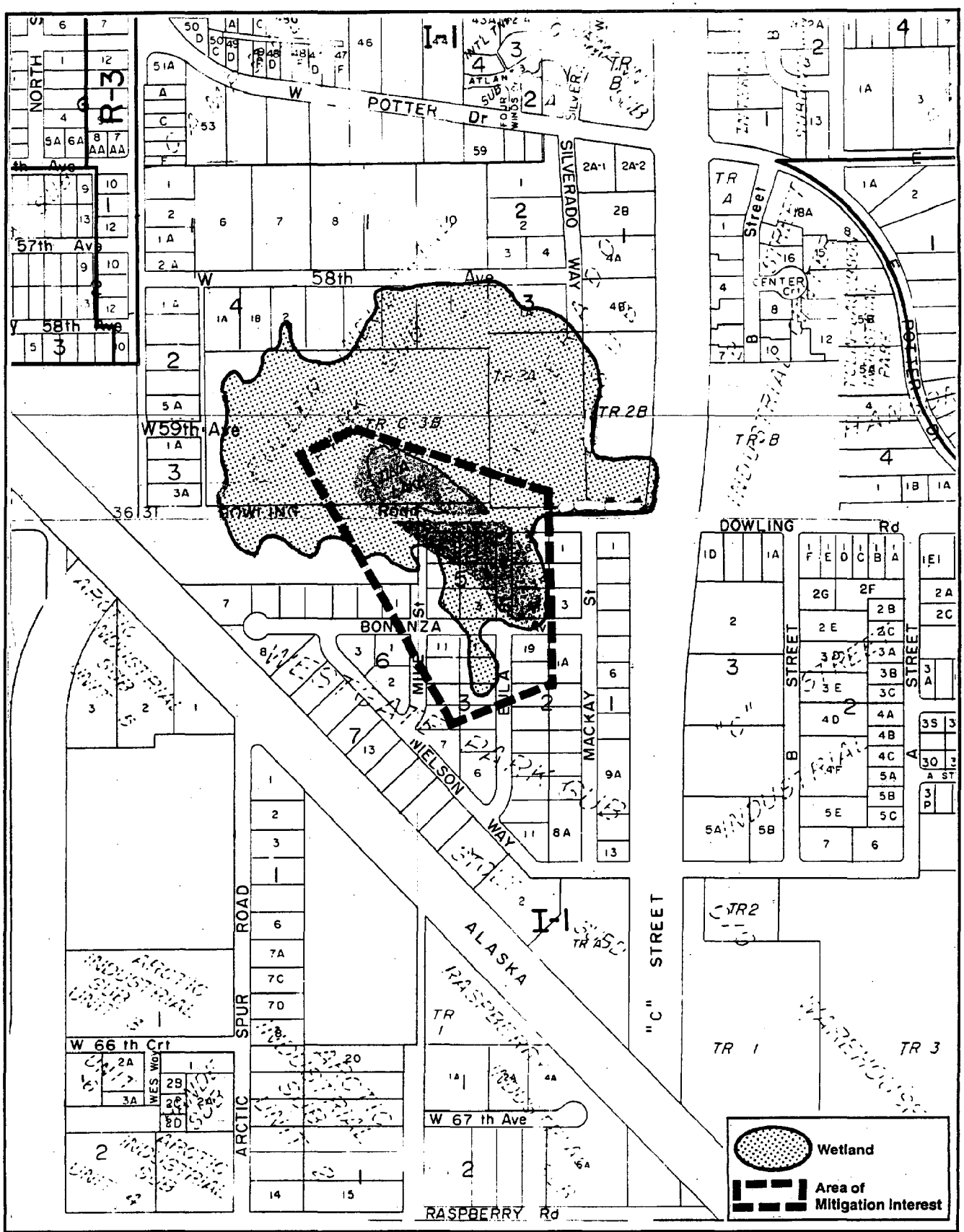
1"=100 feet MOA Map 2030

POTENTIAL MITIGATION ACTIONS:

Restoration ___X___ Enhancement _____ Acquisition ___X___

minimize impacts to Tina Lake waters from ongoing development activity and maintain function of remaining perimeter wetlands;

correct drainage problems; investigate cause of lowering of lake level (constructed drainge?) and implement restoration; with the encroaching development, acquisition should be evaluated



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A16	Site Name: TINA LAKE	MOA Wetland No.: 12A	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A17
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: TAKU LAKE WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): N/A

MOA WETLAND MAP SHEET (1982 COVERAGE): A68

MOA AERIAL PHOTO: Date 1985 Number 6-7, 6-8

WETLAND OWNERSHIP: MOA X Public _____ Private _____

ZONING: Open Space Reserve

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

A fringe of wetland has developed around the southwest perimeter of this man-made lake.

SOILS:

The soils in the area are typically moderate to high permeability alluvial deposits with significant amounts of silt, clay and fine sand overlain by peat (Freethey, 1976). The area has been excavated to create Taku Lake.

Depth to water table: less than 10 feet (Freethey et al., 1974); lake at water table surface
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

unknown

FISH AND WILDLIFE USE:

ADF&G has stocked the Taku/Campbell area with rainbow trout

HUMAN USE:

open space, wildlife viewing, fishing

HYDROLOGY:

Watershed: Campbell Creek
Location within watershed: adjacent to the stream

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: no apparent direct channel inflow or outflow
Surface runoff inflow: probably receives inflow from surrounding area
Groundwater inflow/outflow: groundwater flow direction may generally be from east to west; there may be a net groundwater outflow from the site
Storage capacity: moderate storage; may be sufficient to modify creek flows downstream

Water Quality Components:

Wetland quality: unknown; probably high water quality improvement capacity within wetland
Pollutant sources: adjacent roads and development may contribute sediments and other pollutants

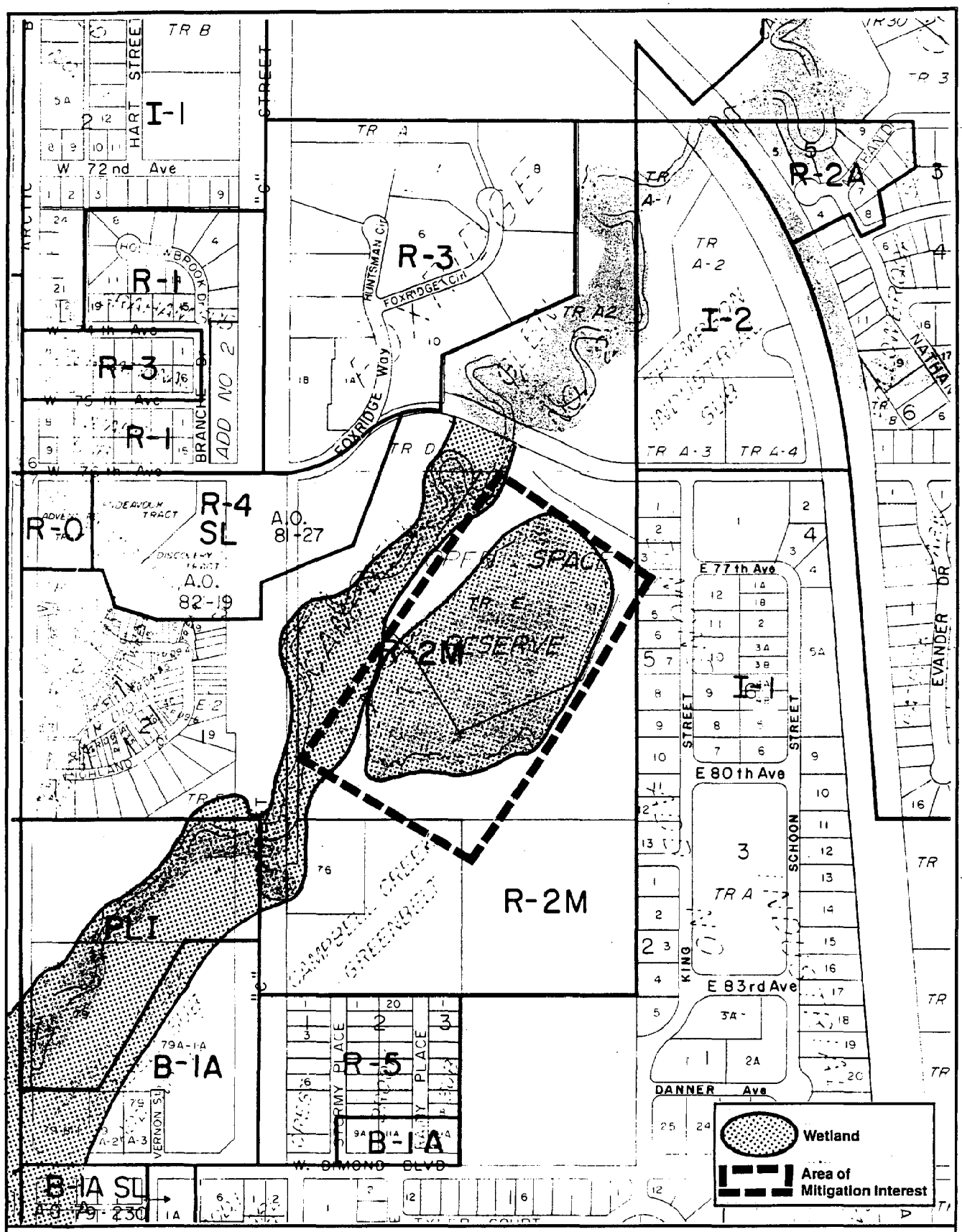
SUPPLEMENTAL INFORMATION:

area is within MOA open space reserve

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement __X__ Acquisition _____

evaluate potential for development of open water zones in wetland around Taku Lake and connect system to Campbell Creek; southwest portion of site has greatest potential for development of interconnected ponds which could attract increased waterbird use and provide rearing areas for juvenile salmonids; connect Taku Lake to Campbell Creek as per HEP guide for fisheries introduction; actions to increase shoreline diversity would enhance the wetland values of the site



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A17	Site Name: TAKU LAKE	MOA Wetland No.: None	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A18
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: MINNESOTA BYPASS WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 6, 9

MOA WETLAND MAP SHEET (1982 COVERAGE): A54, A67, A76

MOA AERIAL PHOTO: Date 1985 Number 5-3/5-9, 6-4/6-7

WETLAND OWNERSHIP: MOA _____ Public X Private X

ZONING: PLI (Public Lands and Institutions), I-1 (Light Industrial District)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	X
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

open bog, freshwater marsh, open water ponds wetland bisected by construction of Minnesota Bypass (particularly near Raspberry Road and O'Malley)

SOILS:

The soils in the area are typically moderate to high permeability alluvial deposits with significant amounts of silt, clay and fine sand overlain by peat (Freethey, 1976). Peat is composed of coarse to decomposed sphagnum moss and sedge fibers and is typically 4 to 12 ft thick (Glass, 1986a). Underlying the peat is about 11 ft of primarily sand with gravel and silt, which is underlain by the silt and clay of the Bootlegger Cove Formation (Glass, 1986a).

Depth to water table: about 1 to 6 ft (Glass, 1986a)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

unknown

FISH AND WILDLIFE USE:

significant use of open wetlands habitat by waterfowl and shorebirds for staging, feeding, nesting, rearing

HUMAN USE:

wildlife viewing, open space, cross country skiing, hiking

HYDROLOGY:

Watershed: Conners Bog
Location within watershed: east edge of basin

Water Balance Components:
Mean annual precipitation: about 15 inches (Glass, 1986a); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: no significant direct channel inflow or outflow
Surface runoff inflow: receives minor inflow from area east of the site
Groundwater inflow/outflow: groundwater flow direction may generally be from northeast to southwest; there may be a net groundwater outflow from the site
Storage capacity: large storage; no creek flow downstream

Water Quality Components:
Wetland quality: calcium and bicarbonate are predominant cation and anion (Glass, 1986a); probably high water quality improvement capacity within wetland
Pollutant sources: Minnesota Bypass and adjacent roads and development may contribute sediments and other pollutants

Comments: see study by U.S. Geological Survey (Glass, 1986a)

SUPPLEMENTAL INFORMATION:

1"=100 feet MOA Maps 2028, 2128, 2228

POTENTIAL MITIGATION ACTIONS:

Restoration ___X___ Enhancement ___X___ Acquisition _____

restore cross drainage to correct dewatering of wetland on downslope side of roadway; evaluate potential for development of

shallow depression interconnected ponds to improve function of high water table wetland as waterbird habitat

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A19
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: SAND/SUNDI/JEWEL LAKES & WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 2

MOA WETLAND MAP SHEET (1982 COVERAGE): A52, A65

MOA AERIAL PHOTO: Date 1985 Number 4-4,4-5,4-6

WETLAND OWNERSHIP: MOA X Public _____ Private X

ZONING: R-1 (1 Family Residential), PLI (Public Lands and Institutions, R-2M (Multiple Family Residential District), R-2 SL and R-3 SL (Multiple Family Residential - Special Limitations)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

riparian wetlands adjacent to lake shorelines, shallow ponds and open water marsh, vegetated wetlands with high water table, remnants of canal and drainage channel construction

SOILS:

The soils in the area are typically moderate to high permeability alluvial deposits with significant amounts of silt, clay and fine sand overlain by peat (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974); lakes at water table surface
Surface soil erodibility: unknown

EXISTING HABITAT AND VEGETATION:

bogs and open water lakes, grasses, sedges, willows, alders, black spruce

FISH AND WILDLIFE USE:

heavy waterfowl use for feeding, nesting; local, limited fishery for Dolly Varden; ADF&G has stocked Jewel and Sand Lakes with rainbow trout and will be doing a limited stocking of Sundi Lake for the first time in 1988 (previously, public access concerns)

HUMAN USE:

open space, ice skating, walking and hiking, waterfowl and wildlife viewing, cross country skiing; provides educational opportunities for wetland functioning

HYDROLOGY:

wetlands that interconnect Sand, Sundi, and Jewel Lakes are hydrologically related; central core area of wetland has water table at or near the surface

Watershed: Campbell Creek
Location within watershed: tributary system

Water Balance Components:

Mean annual precipitation: about 15 inches (Zenone, 1976); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: no apparent direct channel inflow or outflow
Surface runoff inflow: receives moderate inflow from local drainage area
Groundwater inflow/outflow: there may be a net groundwater inflow to the site from both the east and west in the unconfined aquifer (Zenone, 1976)
Storage capacity: large storage; good capability to control flow downstream

Water Quality Components:

Wetland quality: probably high water quality improvement capacity within wetland
Pollutant sources: unknown

SUPPLEMENTAL INFORMATION:

Southern portion up to 84th Avenue right-of-way is MOA parkland.

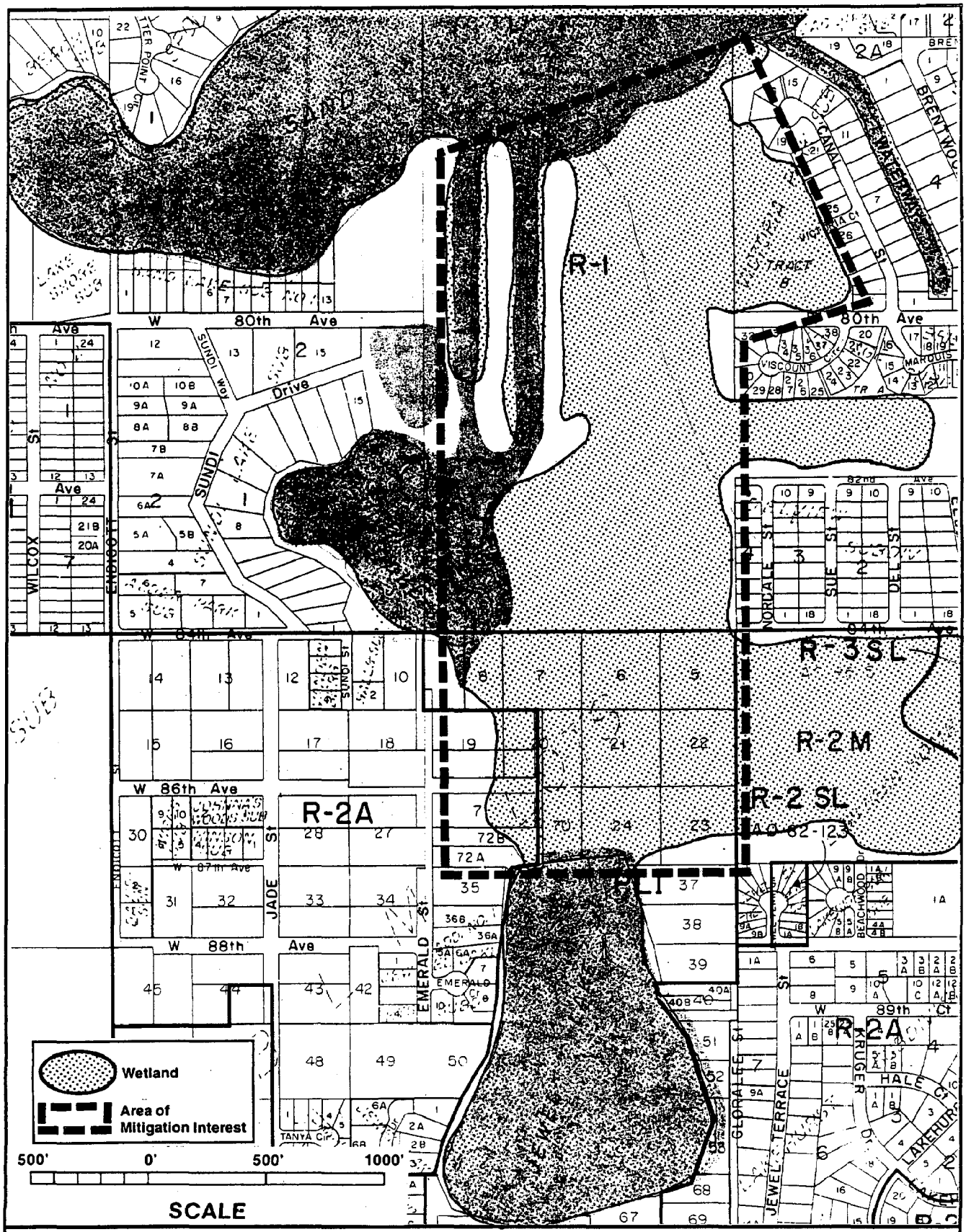
1"=100 feet MOA Maps 2124, 2125, 2224, 2225, 2324, 2325

1"=500 feet MOA Zoning Map 13

POTENTIAL MITIGATION ACTIONS:

Restoration X Enhancement X Acquisition X

acquire privately owned wetlands to insure protection and consistent management of wetland complex and hydrologically related lakes; evaluate need to modify canals and ditches from prior drainage efforts; consider winter construction of interconnected pools and shallow depressions to provide shallow open water habitats for waterbirds and encourage emergent vegetation



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A19	Site Name: SAND/SUNDI/JEWELL LAKES & WETLANDS	MOA Wetland No.: 2	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A20
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: CONNORS BOG/STRAWBERRY LAKE

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 6

MOA WETLAND MAP SHEET (1982 COVERAGE): A41,A53-54, A67

MOA AERIAL PHOTO: Date 1985 Number 5-8, 5-9

WETLAND OWNERSHIP: MOA X Public X Private X

SITE SPECIFIC WETLANDS STUDIES: Connors Bog Master Plan; Hogan and Tande 1982, 1983; Glass, 1986a

ZONING: T (Transition)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

riparian wetlands adjoining Connors, Blueberry, and Strawberry lakes; hydrologically connected swales and depressions throughout varying from black spruce bog to open water ponds with emergent vegetation;

SOILS:

The soils in the area are typically moderate to high permeability alluvial deposits with significant amounts of silt, clay and fine sand overlain by peat (Freethey, 1976). Peat is composed of coarse to decomposed sphagnum moss and sedge fibers and is typically 4 to 12 ft thick (Glass, 1986a). Peat layer is capable of storing a large amount of water. Underlying the peat is about 11 ft of

primarily sand with gravel and silt, which is underlain by the silt and clay of the Bootlegger Cove Formation (Glass, 1986a).

Depth to water table: about 1 to 6 ft (Glass, 1986a); lakes at water table surface
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

This is a concave patterned bog complex containing two lakes (Connors and Strawberry) and scattered forested bog islands. A series of string bogs and ericaceous shrub bogs occur between Connors Lake in the north and Strawberry Lake in the south. Bog ridges join to form nets around seasonally flooded shallow ponds. Parallel bog ridges are aligned across the slope at right angles to water movement.

Man-induced drainage and flooding has altered the natural vegetation patterns of the entire wetland. Pioneering plants (alder, paper birch, willows, bluejoint grass, rush) are present along the remnant shoreline of Connors Lake from a previously higher water level. The ditch dewatering Strawberry Lake has decreased the lake's open water area to one-fourth its original 9.2 acres.

FISH AND WILDLIFE USE:

Used by waterbirds for nesting, feeding, resting; 80 species of birds have been observed in Connors Bog. The area supports populations of Hudsonian godwits and short-billed dowitchers, locally uncommon species. South side of Connors Bog is the most heavily used area in the spring. Strawberry Lake and the pools to the north provide open water earliest and are first to be used by ducks and geese for feeding and resting during migration. Connors Lake was historically (but no longer) stocked with rainbow trout.

HUMAN USE:

skiing, walking and hiking, waterfowl and wildlife viewing, open space; important use for outdoor education

HYDROLOGY:

Watershed: Conners Bog
Location within watershed: Strawberry in southeast corner of basin

Water Balance Components:
Mean annual precipitation: about 15 inches (Glass, 1986a); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: no significant direct channel inflow or outflow

Surface runoff inflow: receives inflow from areas adjacent to the site
Groundwater inflow/outflow: groundwater flow direction is generally be from north to south in the Strawberry Lake area (Glass, 1986a); there may be a net groundwater outflow from the site
Storage capacity: large storage; no creek flow downstream

Water Quality Components:
Wetland quality: calcium and bicarbonate are predominant cation and anion (Glass, 1986a); probably high water quality improvement capacity within wetland
Pollutant sources: Minnesota Bypass and adjacent roads and development may contribute sediments and other pollutants

complex interconnected hydrology; Connors Lake recharge areas identified; Minnesota Bypass interrupts some of the recharge flow from eastern portions of the bog; ditch has drained shrub/scrub habitat adjoining Strawberry Lake; only minor role in water purification; important role for storm storage capacity and flood hazard reduction

SUPPLEMENTAL INFORMATION:

Connors Bog and Strawberry Meadows proposed by MOA for acquisition of private ownership parcels under USFWS Wetlands Concept Plan

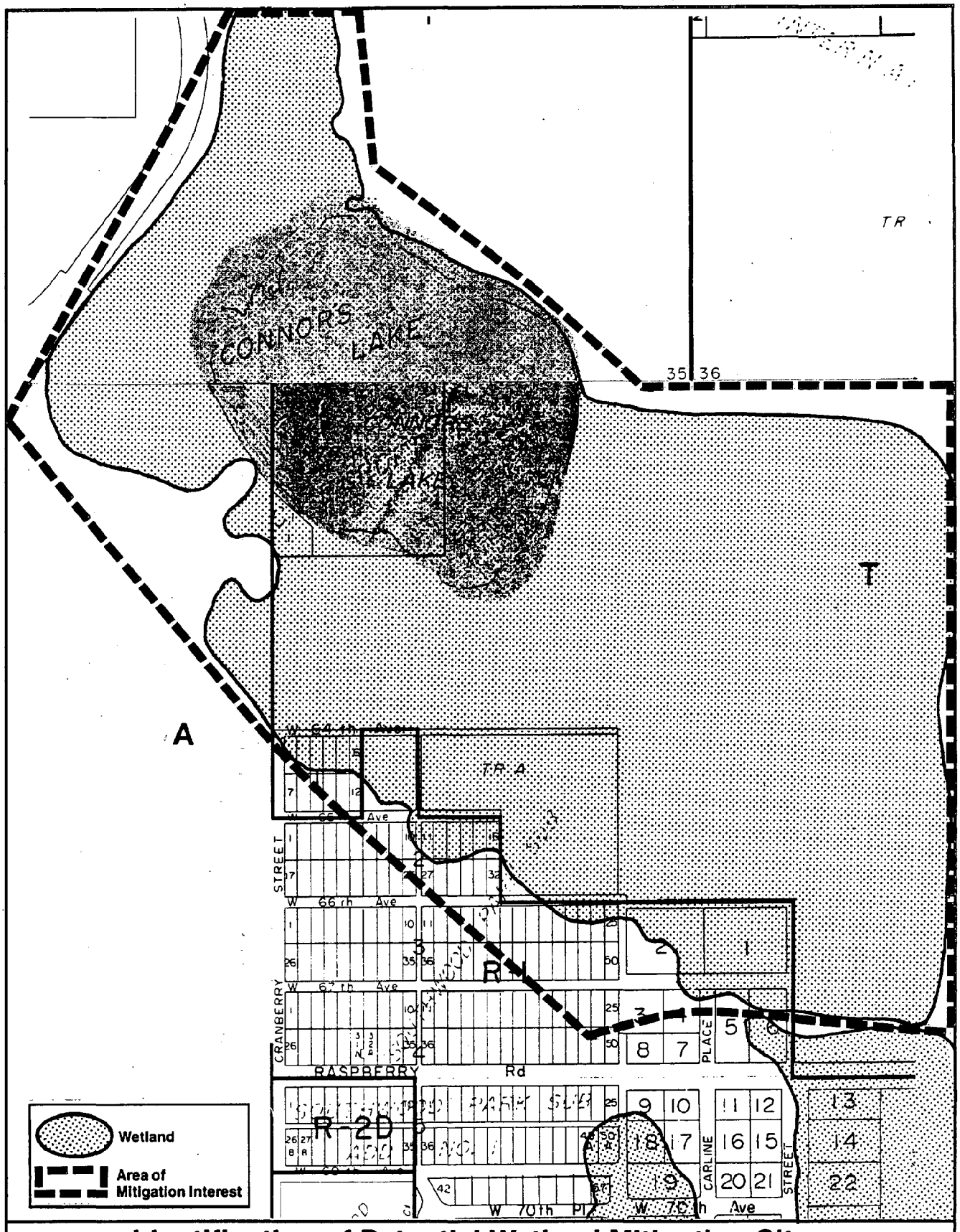
disposal of snow from roadway plowing and off-road vehicle damage are concerns within wetland

1"=100 feet MOA Maps 1927, 1928, 2026, 2027

POTENTIAL MITIGATION ACTIONS:

Restoration X Enhancement X Acquisition X

more water needed in Strawberry lake; effects of ditching and dewatering to be corrected; acquisition of undeveloped private ownership parcels within and surrounding the wetlands to protect the functions and watershed which recharges Connors Lake; draft MOA Wetlands Plan has identified specific parcels for purchase



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A20	CONNORS BOG/ Site Name: STRAWBERRY LAKE	MOA Wetland No.: 6	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A21
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: BLUEBERRY LAKE

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 6

MOA WETLAND MAP SHEET (1982 COVERAGE): A54

MOA AERIAL PHOTO: Date 1985 Number 5-8,6-8,6-9

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

SITE SPECIFIC WETLANDS STUDIES: Connors Bog Master Plan; Glass, 1986a

ZONING: I-1 (Light Industrial District)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	X
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

dewatered freshwater lake and riparian wetlands within larger Connors Bog Complex

SOILS:

The soils in the area are typically moderate to high permeability alluvial deposits with significant amounts of silt, clay and fine sand overlain by peat (Freethey, 1976). Peat is composed of coarse to decomposed sphagnum moss and sedge fibers and is typically 4 to 12 ft thick (Glass, 1986a). Underlying the peat is about 11 ft of primarily sand with gravel and silt which is underlain by the silt and clay of the Bootlegger Cove Formation (Glass, 1986a).

Depth to water table: about 1 to 6 ft (Glass, 1986a)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

unknown

FISH AND WILDLIFE USE:

waterbird habitat

HUMAN USE:

wildlife viewing, open space

HYDROLOGY:

Watershed: Conners Bog
Location within watershed: Blueberry on east edge of basin

Water Balance Components:

Mean annual precipitation: about 15 inches (Glass, 1986a); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: no significant direct channel inflow or outflow
Surface runoff inflow: receives inflow from areas adjacent to the site
Groundwater inflow/outflow: groundwater flow direction is generally from northeast to southwest in the Blueberry Lake area (Glass, 1986a); there may be a net groundwater outflow from the site
Storage capacity: large storage; no creek flow downstream

Water Quality Components:

Wetland quality: calcium and bicarbonate are predominant cation and anion (Glass, 1986a); probably high water quality improvement capacity within wetland
Pollutant sources: Minnesota Bypass and adjacent roads and development may contribute sediments and other pollutants

SUPPLEMENTAL INFORMATION:

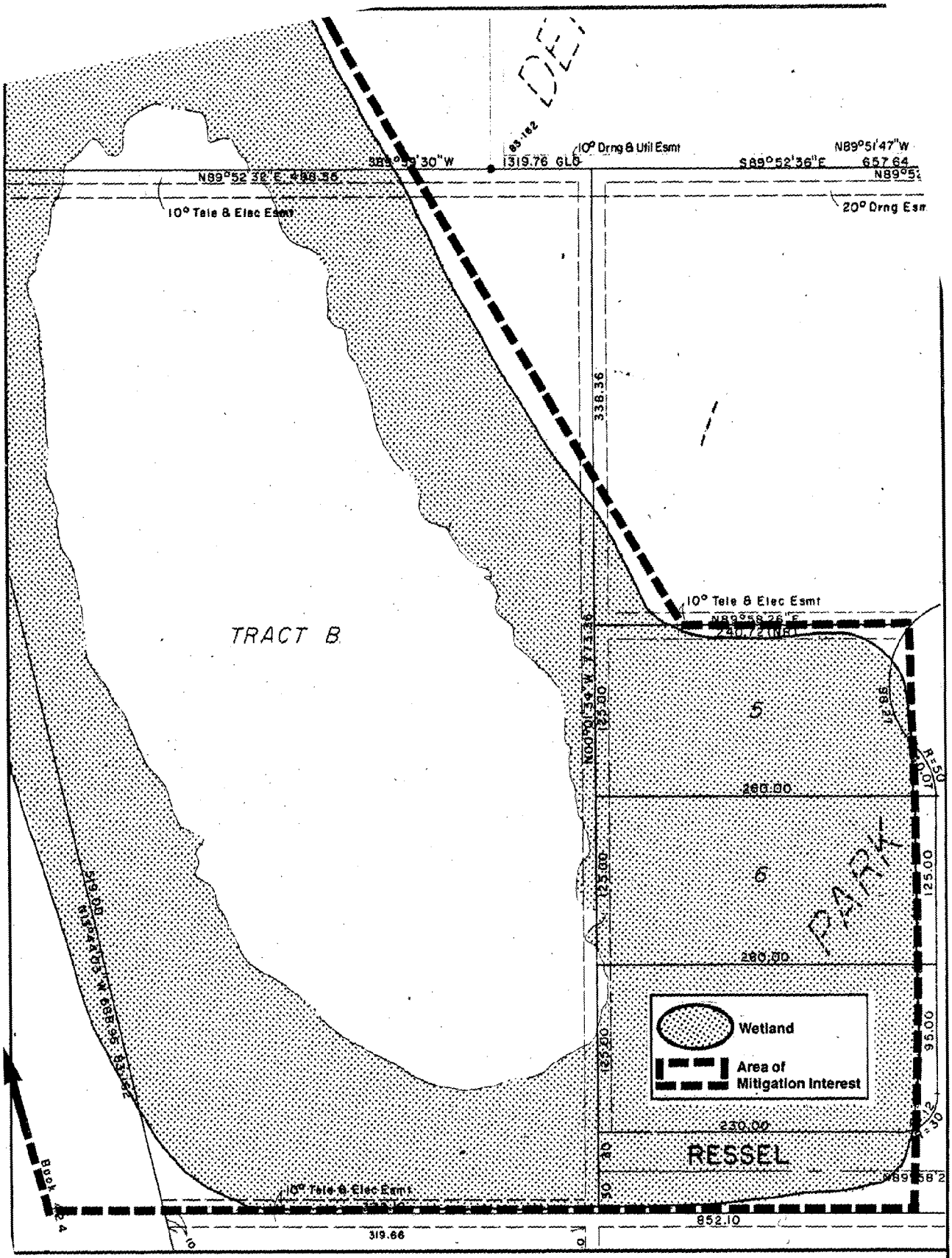
ongoing suit filed by EPA for draining of Blueberry Lake

1"=100 feet MOA Maps 2028, 2029

POTENTIAL MITIGATION ACTIONS:

Restoration X Enhancement X Acquisition X

restore water level in Blueberry Lake; evaluate potential enhancement of riparian wetlands adjoining lake; acquire private lands to protect Blueberry Lake and Connors Bog complex



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

te No.: A21	Site Name: BLUEBERRY LAKE	MOA Wetland No.: 6	Prepared by: Resource Analysts 7/88	Scale: 1"

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A22
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: DELONG LAKE PARK WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 3, 4

MOA WETLAND MAP SHEET (1982 COVERAGE): A41, A52

MOA AERIAL PHOTO: Date 1985 Number 4-7,4-8

WETLAND OWNERSHIP: MOA X Public X Private X

SITE SPECIFIC WETLANDS STUDIES: Anchorage International Airport Master Plan

ZONING: PLI (Public Lands and Institutions), R-1 (1 Family Residential)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

DeLong Lake and adjoining riparian wetlands; Meadow Lake and adjoining riparian wetlands

SOILS:

The soils in the area are typically moderate to low permeability lake and pond deposits composed of silt, clay and fine sand (Freethey, 1976).

Depth to water table: less than 10 feet at lakes, 10 to 20 feet between lakes (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

unknown

FISH AND WILDLIFE USE:

Meadow Lake and associated wetlands recognized by ADF&G as important waterbird habitat; rainbow trout stocked in Delong Lake by ADF&G

HUMAN USE:

wildlife viewing, open space, fishing, ice skating

HYDROLOGY:

Watershed: Delong-Meadow Lake system
Location within watershed: center of closed basin

Water Balance Components:

Mean annual precipitation: about 15 inches (Zenone, 1976); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: no significant direct channel inflow or outflow
Surface runoff inflow: receives inflow from areas adjacent to the site
Groundwater inflow/outflow: groundwater flow direction is generally from east to west (Zenone, 1976); there may be a net groundwater inflow to the site
Storage capacity: moderate storage; no creek flow downstream

Water Quality Components:

Wetland quality: probably high water quality improvement capacity within wetland
Pollutant sources: adjacent roads and development may contribute sediments and other pollutants

SUPPLEMENTAL INFORMATION:

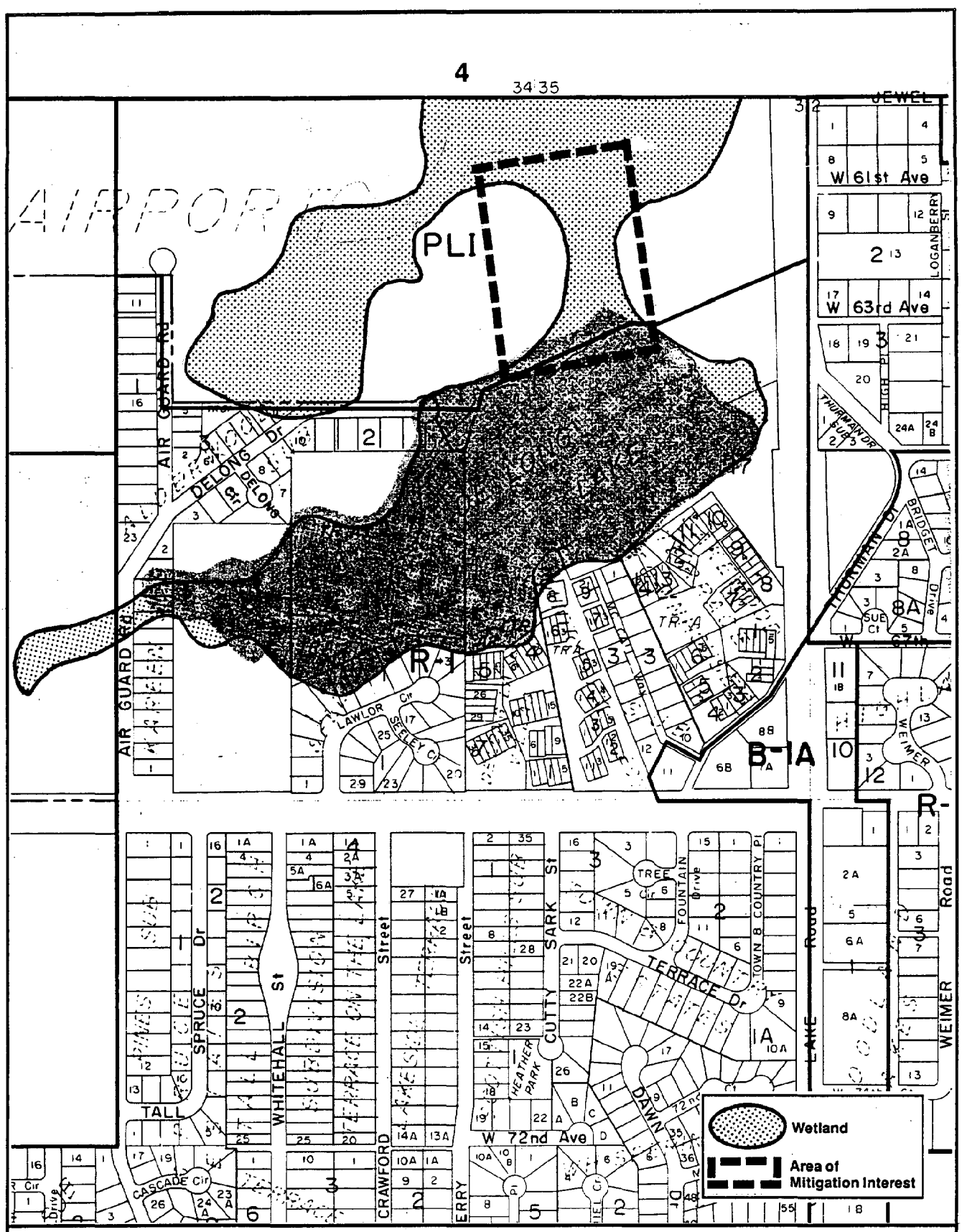
Part of DeLong Lake wetlands is MOA parkland and Homeowner's Association common areas around lake edge. State of Alaska land is designated as park in the Anchorage International Airport Master Plan.

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement __X__ Acquisition __X__

Explore feasibility of connecting surface swales in upland between DeLong Lake and Meadow Lake to expand wildlife habitat and to improve productivity of lake-associated wetlands. Acquisition of private ownership parcels would improve management of preservation

wetlands and protect water input along defined drainage channels. Specific parcels recommended for acquisition are identified in the MOA Draft Wetland Plan.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A22	DELONG LAKE Site Name: PARK WETLANDS	MOA Wetland No.: 3,4	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A23
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: COASTAL TRAIL WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 5D

MOA WETLAND MAP SHEET (1982 COVERAGE): A26

MOA AERIAL PHOTO: Date 1985 Number 1 - 6

WETLAND OWNERSHIP: MOA X Public _____ Private _____

SITE SPECIFIC WETLANDS STUDIES: identified for special study in MOA 1982 Anchorage Wetlands Plan

ZONING: PLI

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	
Nutrient Retention & Removal	
Food Chain Support	
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

open wetland with high spring runoff through culvert under Anchorage Coastal Trail; site has no open water habitat

SOILS:

The soils in the area are typically moderate to high permeability alluvial deposits with significant amounts of silt and clay (Freethey, 1976).

Depth to water table: probably near surface
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

unknown

FISH AND WILDLIFE USE:

unknown

HUMAN USE:

wildlife viewing, open space

HYDROLOGY:

Two drainage corridors are known to exist at the ends of each of the parcels comprising wetland 5D. Heavy spring runoff flows through a culvert under Anchorage Coastal Trail which adjoins the west perimeter of the wetlands.

Watershed: unnamed drainages
Location within watershed: in basin, may be connected to small channel

Water Balance Components:

Mean annual precipitation: about 15 inches (Zenone, 1976); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: channel outflow reported during spring runoff through culvert under coastal trail; no inlet channel known
Surface runoff inflow: probably receives minor inflow from areas adjacent to the site
Groundwater inflow/outflow: there may be a net groundwater outflow from the site
Storage capacity: minor storage; some impact on small drainage flow downstream

Water Quality Components:

Wetland quality: probably moderate water quality improvement capacity within wetland
Pollutant sources: none known

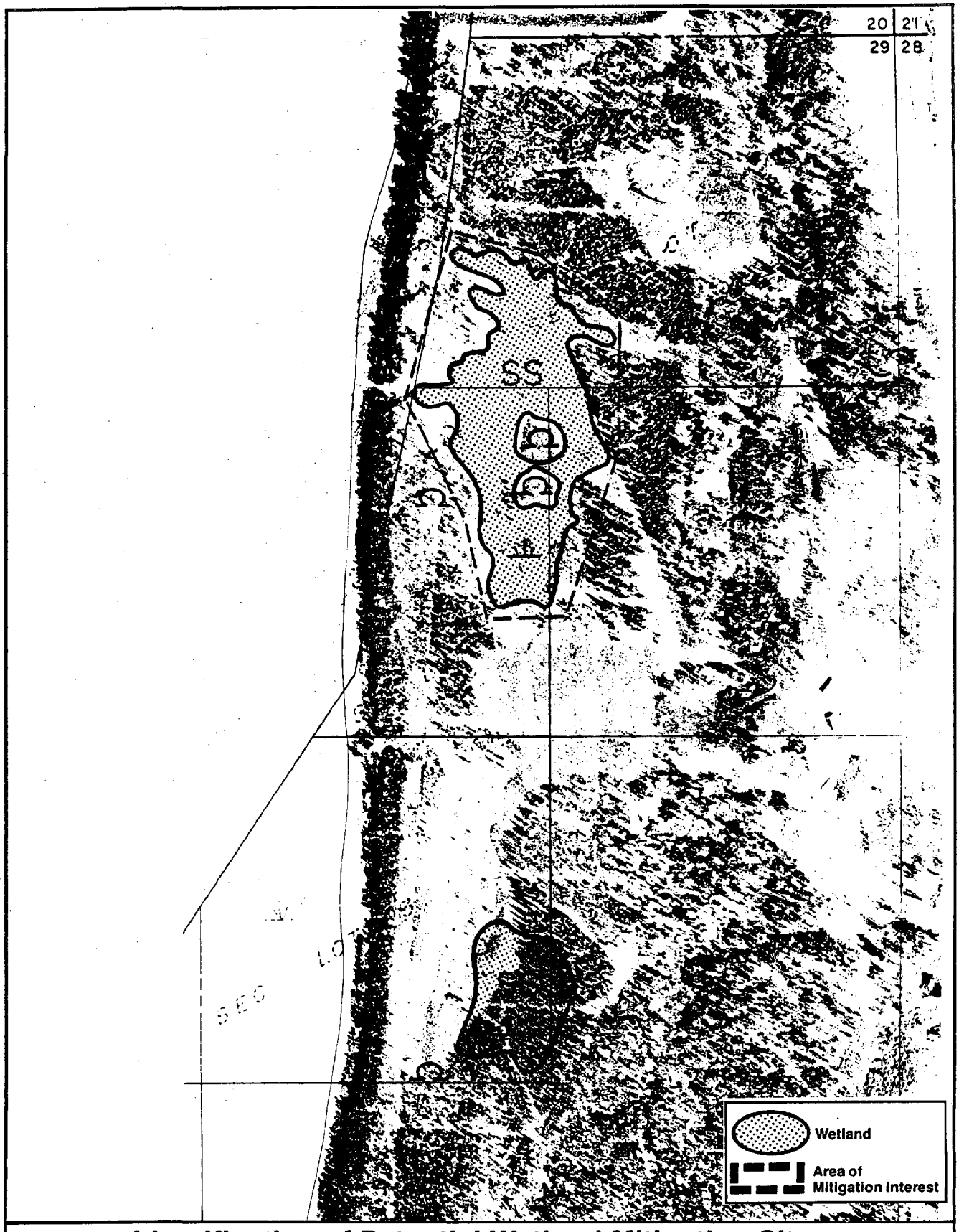
SUPPLEMENTAL INFORMATION:

none

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement ___X___ Acquisition _____

Evaluate the potential for construction of a water control structure or impoundment to create an open water area attractive to waterbirds on the upslope side of the Anchorage Coastal Trail.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A23	Site Name: COASTAL TRAIL WETLAND	MOA Wetland No.: 26	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A24
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: EARTHQUAKE PARK WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 5

MOA WETLAND MAP SHEET (1982 COVERAGE): A17

MOA AERIAL PHOTO: Date 1985 Number 4-11

WETLAND OWNERSHIP: MOA X Public _____ Private _____

ZONING: PLI (Public Lands and Institutions)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	
Shoreline Anchoring/Erosion Control	
Sediment Trapping	
Nutrient Retention & Removal	
Food Chain Support	X
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

isolated ponds and wetlands created by undulating topography of the Earthquake Park subsidence area; variable size, with smallest almost obscured by shrub and tree vegetation along upland perimeter

SOILS:

The soils in the area are typically moderate to low permeability deposits composed of silt, clay, and fine sand (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

alternating upland ridges and small swales/ponds; includes open water ponds, wetland depressions surrounded by alder and willow

FISH AND WILDLIFE USE:

waterfowl use of open water ponds, particularly by teal

HUMAN USE:

wildlife viewing, open space, hiking

HYDROLOGY:

Watershed: isolated depressions
Location within watershed: center of closed basins

Water Balance Components:
Mean annual precipitation: about 15 inches (Zenone, 1976); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: typically none
Surface runoff inflow: receives very minor inflow from areas adjacent to the site
Groundwater inflow/outflow: there may be a minor net groundwater inflow to the site
Storage capacity: minor storage; no creek flow downstream

Water Quality Components:
Wetland quality: N/A
Pollutant sources: none

SUPPLEMENTAL INFORMATION:

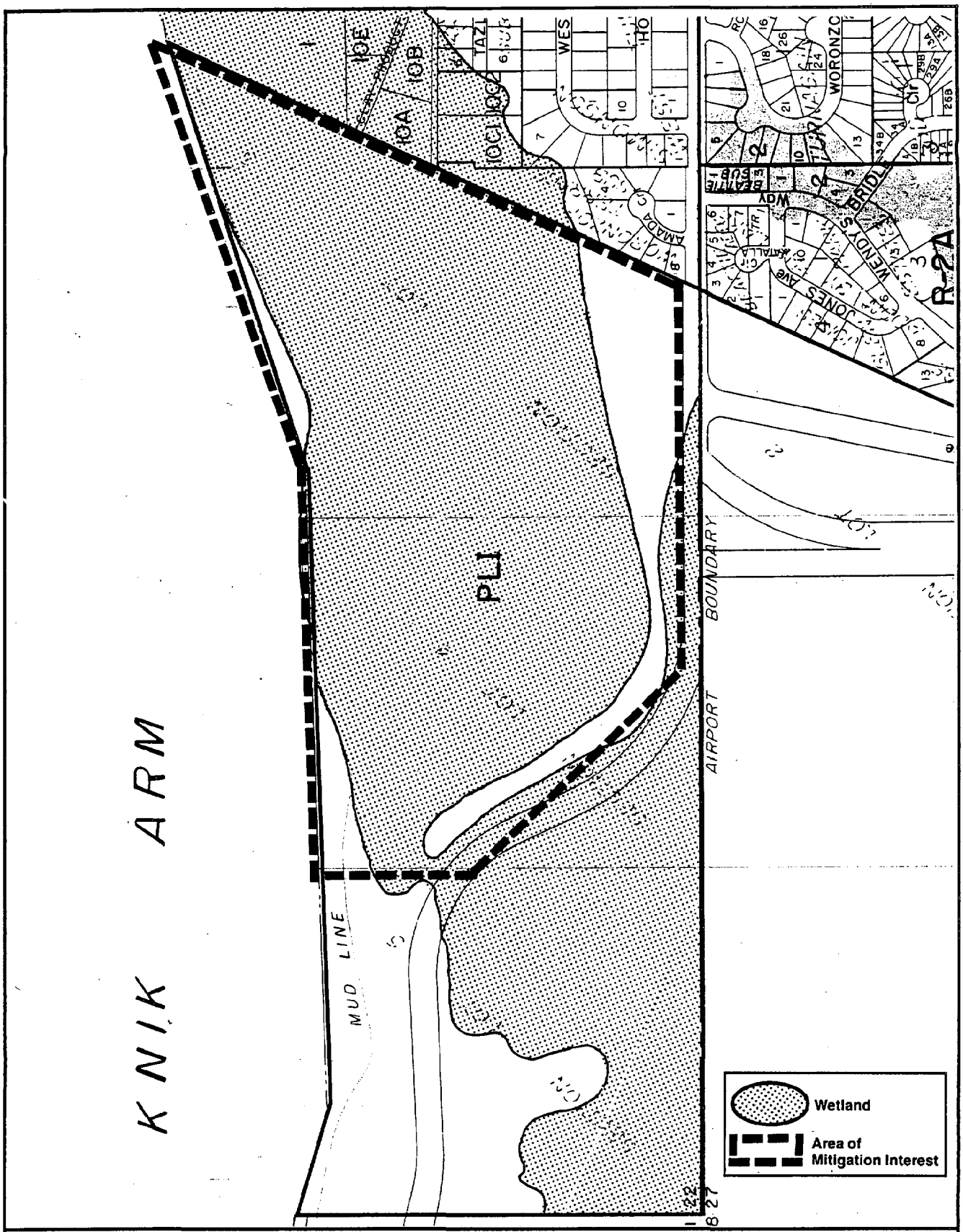
area is within MOA Earthquake Park

1"=100 feet MOA Maps 1524, 1525

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement __X__ Acquisition _____

Some of the ponds may be made more attractive to waterfowl if deepened and expanded in size. Other ponds have become overgrown with vegetation and may warrant hand-removal of excessive woody vegetation along the perimeters to make the wetlands more attractive to waterbirds.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A24	Site Name: EARTHQUAKE PARK WETLANDS	MOA Wetland No.: 5	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A25
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: LOWER FISH CREEK WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): N/A

MOA WETLAND MAP SHEET (1982 COVERAGE): A18

MOA AERIAL PHOTO: Date 1985 Number 5-12,5-13,5-14

WETLAND OWNERSHIP: MOA X Public _____ Private X

ZONING: R-1A (1 Family Residential District - Large Lot)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) X Freshwater _____

tidally-influenced wetlands at the mouth of Fish Creek

SOILS:

The soils in the area are typically moderate to low permeability deposits composed of silt, clay, and fine sand (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

within tidal zone; minimal vegetative development (sparse halophytes); several perched ponds present

FISH AND WILDLIFE USE:

area used for feeding and resting by waterfowl and shorebirds

HUMAN USE:

wildlife viewing (particularly along the Anchorage Coastal Trail), open space

HYDROLOGY:

Watershed: Fish Creek
Location within watershed: on and adjacent to stream channel at mouth/estuary

Water Balance Components:

Mean annual precipitation: about 15 inches (Zenone, 1976); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: inflow during flood tides
Stream channel inflow/outflow: Fish Creek passes through site; flow may be moderate
Surface runoff inflow: receives minor inflow from small drainage areas adjacent to the site
Groundwater inflow/outflow: there may be minor net groundwater inflow to the site
Storage capacity: minor storage; minimal control of creek flow downstream

Water Quality Components:

Wetland quality: probably moderate water quality improvement capacity within wetland
Pollutant sources: runoff from local and upstream developments may contribute sediments and other pollutants to the site

SUPPLEMENTAL INFORMATION:

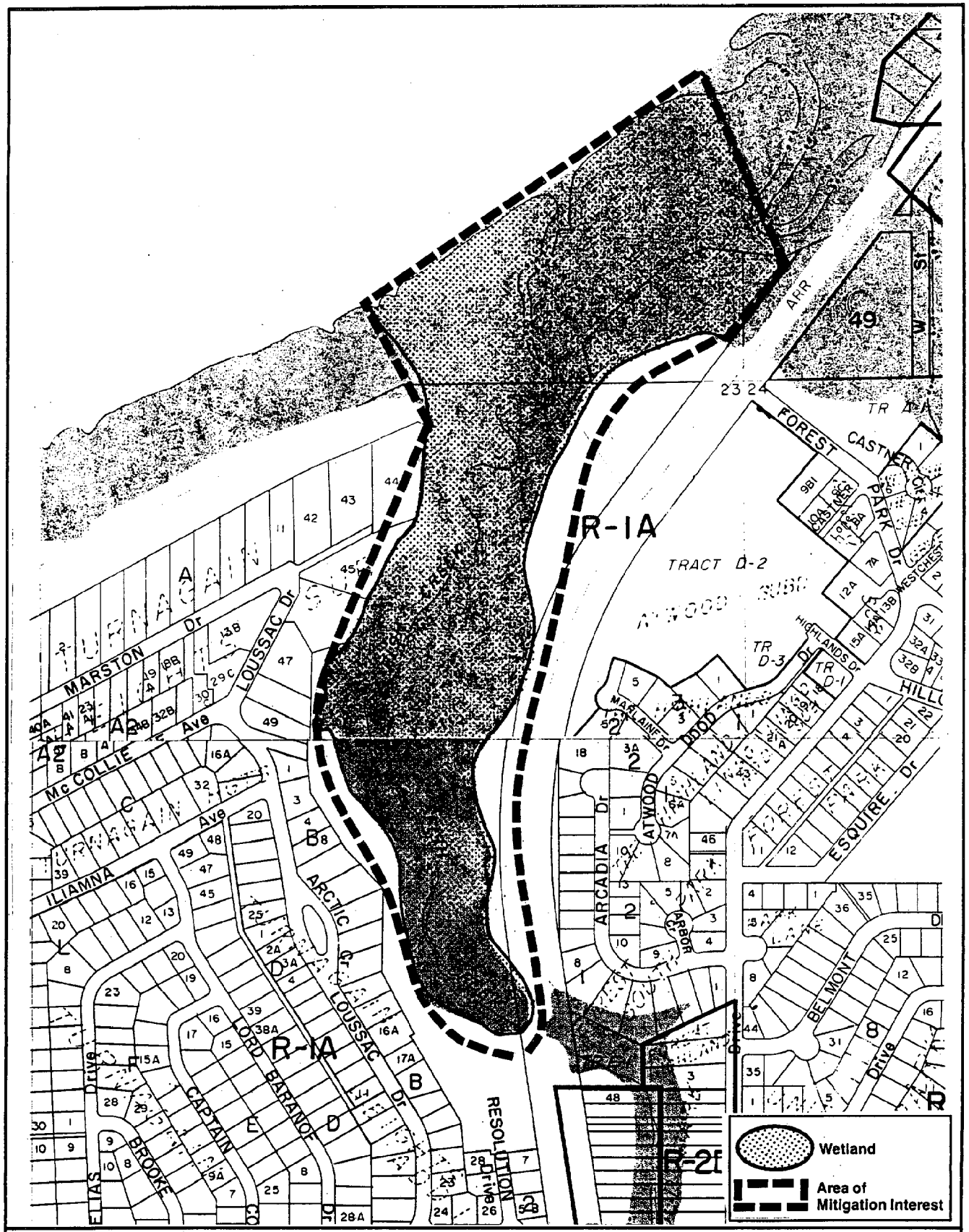
The wetlands are not identified in revised MOA Wetlands Plan since they are coastal (estuarine).

1"=100 feet MOA Map 1427

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement __X__ Acquisition _____

enhance perched ponds; stabilize water levels; encourage shallow water vegetation to create attractive habitat for waterbirds; evaluate development of estuarine impoundment with water control structure and enhancement of estuarine vegetation at the mouth of Fish Creek



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A25	LOWER FISH CREEK Site Name: WETLANDS	MOA Wetland No.: N/A	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A26
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: WESTCHESTER LAGOON OUTLET WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 14

MOA WETLAND MAP SHEET (1982 COVERAGE): A19

MOA AERIAL PHOTO: Date 1985 Number 5-13,5-14

WETLAND OWNERSHIP: MOA X Public X Private _____

ZONING: R-1A (1 Family Residential District - Large Lot), R-2M (Multiple Family Residential District)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

shallow ponds and adjoining wetlands with emergent vegetation between Westchester Lagoon and ARR right-of-way

SOILS:

The soils in the area are typically moderate to low permeability deposits composed of silt, clay, and fine sand (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

freshwater ponds with emergent cattails

FISH AND WILDLIFE USE:

waterbird feeding and nesting

HUMAN USE:

wildlife viewing (close proximity to Anchorage Coastal Trail), open space

HYDROLOGY:

Watershed: Chester Creek
Location within watershed: on and adjacent to stream channel near mouth

Water Balance Components:

Mean annual precipitation: about 15 inches (Brabets, 1987); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: Chester Creek passes through culvert at the site; flow is substantial, but isolated from the proposed site development
Surface runoff inflow: receives very minor inflow from local drainage areas adjacent to the site
Groundwater inflow/outflow: there may be minor net groundwater inflow to the site
Storage capacity: minor storage; minimal control of creek flow downstream

Water Quality Components:

Wetland quality: probably minor water quality improvement capacity within wetland
Pollutant sources: runoff from railroad may contribute sediments and other pollutants to the site

SUPPLEMENTAL INFORMATION:

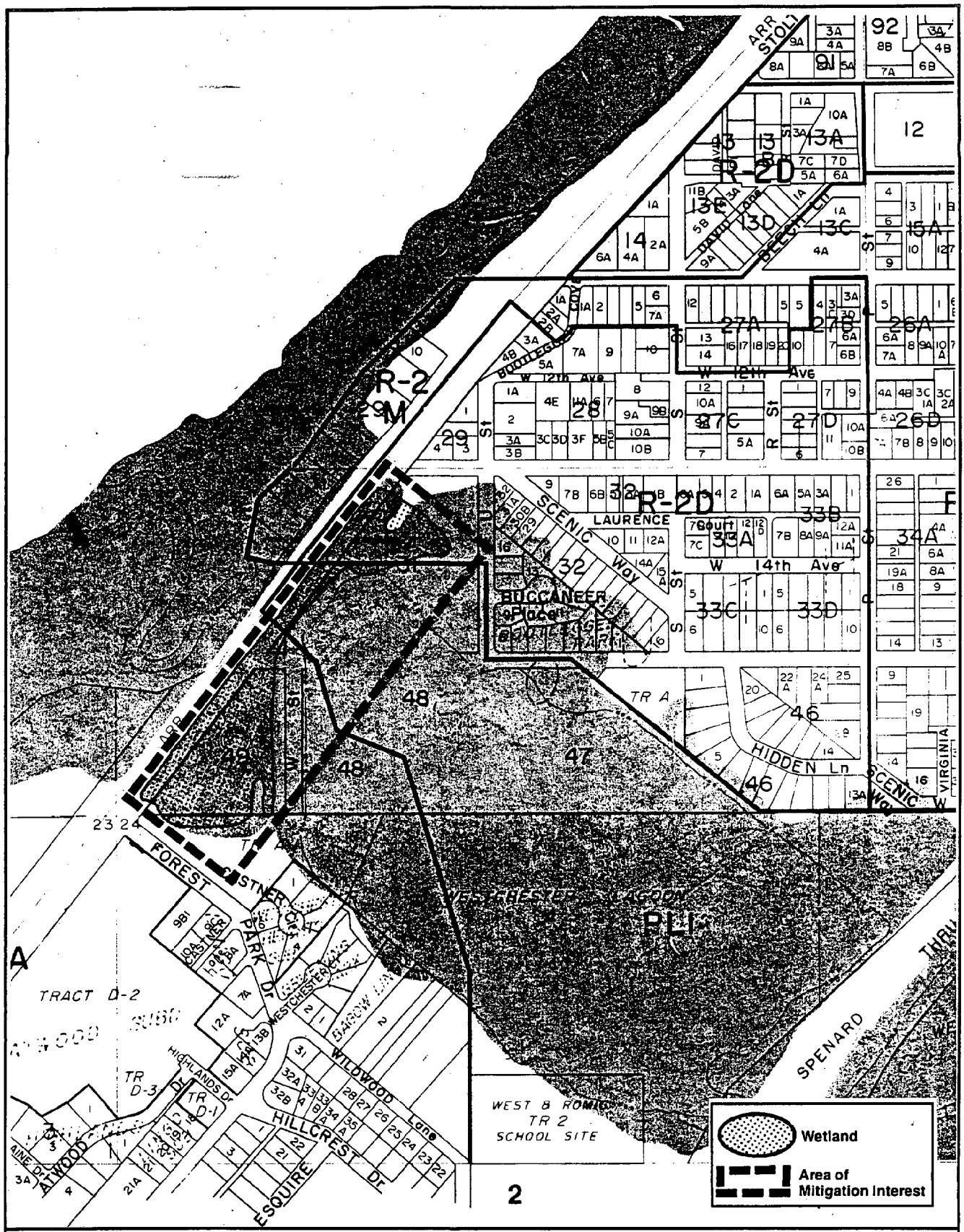
some areas of wetland may be within the Chester Creek Greenbelt

1"=100 feet MOA Map 1428

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement __X__ Acquisition _____

southern pond: improve vegetation for waterbirds and increase pond depth
northern pond: enlarge and enhance cattail pond vegetation for waterbirds on MOA lands between the existing parking areas and ponds



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A26	Site Name: WESTCHESTER LAGOON OUTLET	MOA Wetland No.: 14	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A27
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: WESTCHESTER LAGOON INLET & WESTCHESTER LAKE

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 14

MOA WETLAND MAP SHEET (1982 COVERAGE): A19

MOA AERIAL PHOTO: Date 1985 Number 5-13,5-14

WETLAND OWNERSHIP: MOA X Public _____ Private _____

ZONING: PLI (Public Lands and Institutions)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

wetlands with shallow water emergent vegetation adjoining the shoreline of Westchester Lagoon, Westchester Lake, and the mouth of Chester Creek

SOILS:

The soils in the area are typically moderate to low permeability deposits composed of silt, clay, and fine sand (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974); lake at water table surface
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

open water lagoon and lake with wetland fringe, vegetated islands, riparian wetlands along Chester Creek

FISH AND WILDLIFE USE:

significant use by ducks, geese, shorebirds, gulls for nesting, feeding, resting

HUMAN USE:

high visibility wetland for public viewing and education; water sports on lagoon and lake, including sailing, boating; Chester Creek inlet maintains open water through most winters providing wintering habitat for mallards

HYDROLOGY:

Watershed: Chester Creek
Location within watershed: on and adjacent to stream channel near mouth

Water Balance Components:

Mean annual precipitation: about 15 inches (Brabets, 1987); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: Chester Creek passes through the site; flow is substantial
Surface runoff inflow: receives minor inflow from local drainage areas adjacent to the site
Groundwater inflow/outflow: there may be minor net groundwater outflow from the site
Storage capacity: major storage; control of creek flow downstream

Water Quality Components:

Wetland quality: probably moderate water quality improvement capacity within wetland
Pollutant sources: runoff from roads and other developments may contribute sediments and other pollutants to the site

SUPPLEMENTAL INFORMATION:

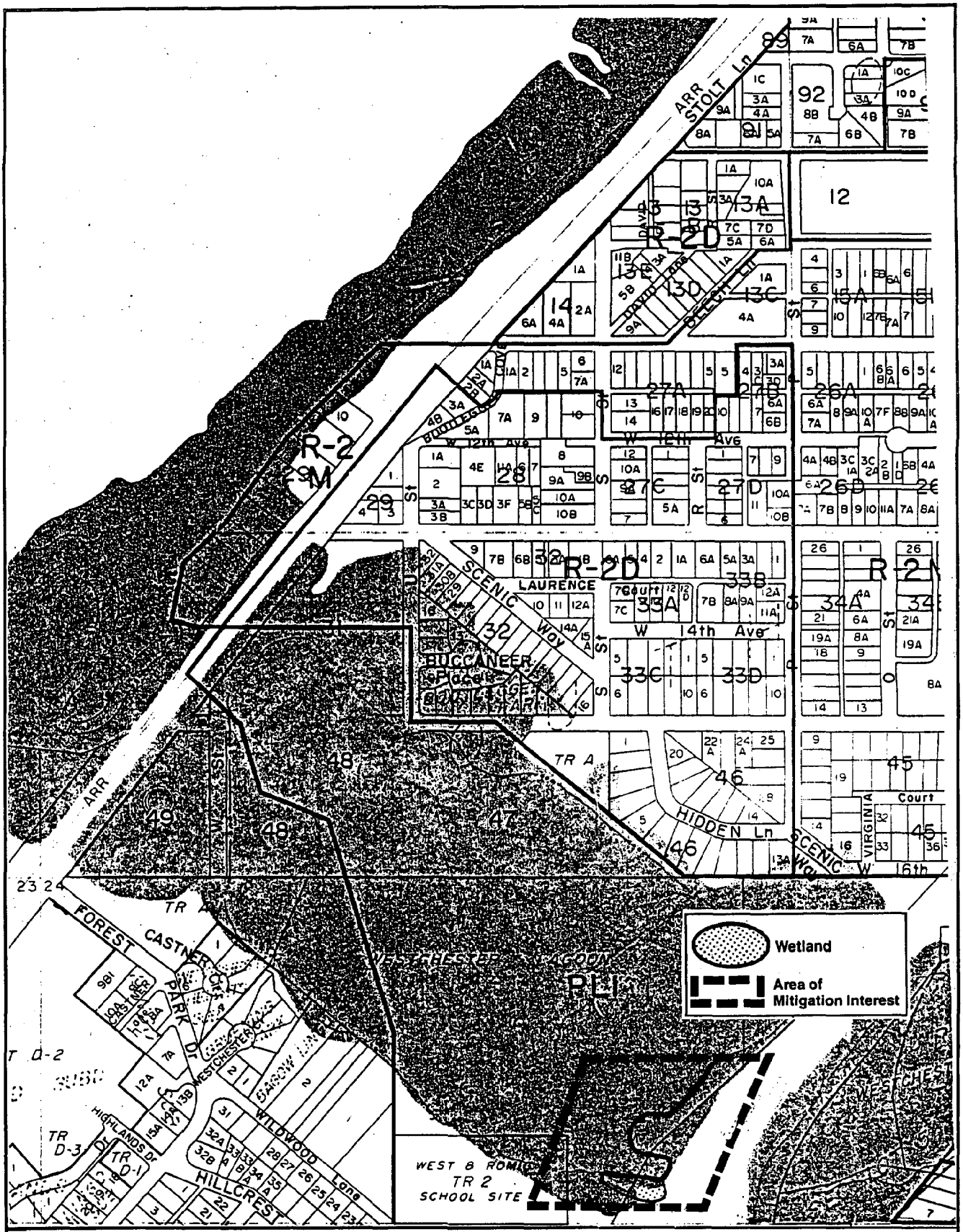
1"=100 feet MOA Maps 1428, 1429, 1529

POTENTIAL MITIGATION ACTIONS:

Restoration ___X___ Enhancement ___X___ Acquisition _____

remove fill at southeast end of lagoon near Chester Creek inflow under Minnesota Drive; expand wetlands toward West High School hill

to improve waterfowl nesting habitat; evaluate wetland expansion along existing wetlands/uplands border east of Minnesota Drive below the hill



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A27	Site Name: WESTCHESTER LAGOON INLET & WESTCHESTER LAKE	MOA Wetland No.: 14	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A28
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: ELDERBERRY PARK IMPOUNDMENT

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): N/A

MOA WETLAND MAP SHEET (1982 COVERAGE): A8

MOA AERIAL PHOTO: Date 1985 Number 6-14, 6-15

WETLAND OWNERSHIP: MOA _____ Public X Private _____

ZONING: R-1A (1 Family Residential District - Large Lot)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	
Flood Storage & Desynchronization	
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) X Freshwater _____

coastal impoundment demonstration project constructed by MOA on tideflats downslope of the Anchorage Coastal Trail; site is south of Elderberry Park

SOILS:

The soils in the area are typically moderate to low permeability deposits composed of silt, clay, and fine sand (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

unvegetated tideflats with constructed impoundment utilizing freshwater surface runoff with tidal waters to create estuarine wetland

FISH AND WILDLIFE USE:

original site used by migrant waterbirds

HUMAN USE:

wildlife viewing

HYDROLOGY:

Watershed: local unnamed drainages
Location within watershed: at mouth/estuary

Water Balance Components:

Mean annual precipitation: about 15 inches (Brabets, 1987); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: may have inflow during diurnal flood tides
Stream channel inflow/outflow: no significant channel inflow; may have outflow through culvert outlet
Surface runoff inflow: receives minor inflow from local drainage areas adjacent to the site
Groundwater inflow/outflow: there may be minor net groundwater inflow to the site
Storage capacity: minor storage; minimal control of creek flow downstream

Water Quality Components:

Wetland quality: probably minor water quality improvement capacity within wetland
Pollutant sources: runoff from bluff may contribute sediments and other pollutants to the site

SUPPLEMENTAL INFORMATION:

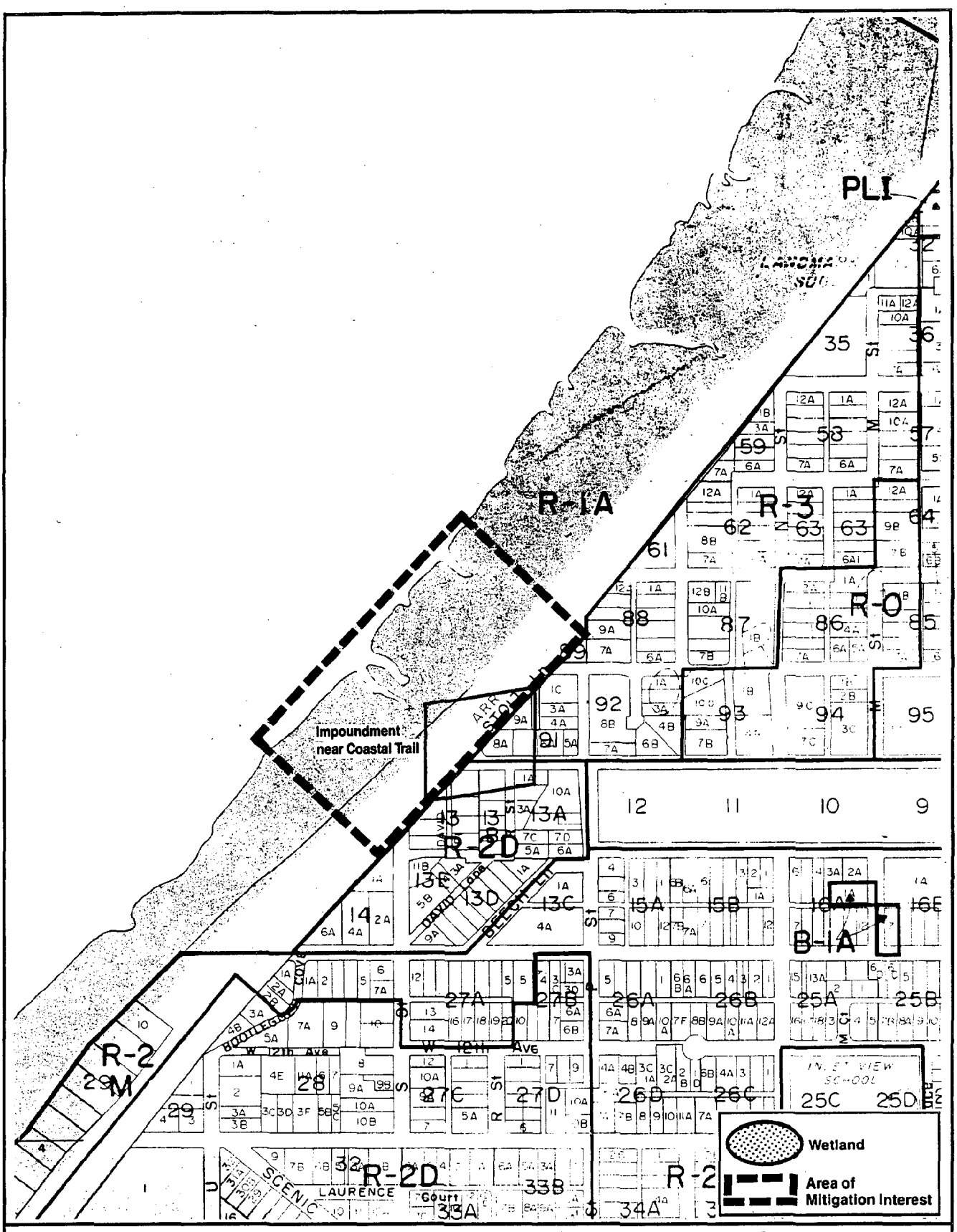
1"=100 feet MOA Map 1229

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement ___X___ Acquisition _____

This is an experimental MOA project done as mitigation for Coastal Trail construction.

evaluate for possible expansion of Elderberry Park impoundment and coastal impoundment concept if successful in creating wetland habitat for waterbirds; possible enhancement work between coastal trail and ARR to encourage wetland development; evaluate potential for revegetation of the impoundment dike



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A28	Site Name: ELDERBERRY PARK IMPOUNDMENT	MOA Wetland No.: None	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A29
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: BUSINESS PARK WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 13

MOA WETLAND MAP SHEET (1982 COVERAGE): A43

MOA AERIAL PHOTO: Date 1985 Number 6-10,6-11

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: B-3 SL, R-4

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

original wetland principally black spruce open bog with limited open water, some patterned ground; open water segments of hydrologically isolated wetland enhanced by impeded drainage of surrounding development

SOILS:

The soils in the area are typically moderate to high permeability alluvial deposits with significant amounts of silt, clay and fine sand overlain by peat (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

open black spruce bog with limited open water areas, some nesting areas, some emergent vegetation

FISH AND WILDLIFE USE:

Area provides intensively used early spring nesting habitat for waterbirds; 12-15 species were identified nesting in the wetlands in 1988. Most common and conspicuous species are Canada geese, pintails, mallards, wigeon, and shorebirds. Breeding densities of waterfowl are among highest in the region.

HUMAN USE:

high visibility wetland surrounded by residential and business park development; important open space in heavily developed area

HYDROLOGY:

Watershed: originally drained to Fish Creek
Location within watershed: headwaters of tributary to Fish Creek that has apparently been isolated from Fish Creek by development

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: none
Surface runoff inflow: receives minor input from local area
Groundwater inflow/outflow: there may be a minor net groundwater outflow from the site
Storage capacity: moderate storage; minor effect on creek flows downstream

Water Quality Components:

Wetland quality: probably moderate water quality improvement capacity within wetland
Pollutant sources: pollution sources include the adjacent parking lots and roads and use of site as snow disposal site

Comments: citizens considering group purchase; recent concern about site hydrology related to construction of a storm drain system which is potentially intercepting surface runoff before it reaches the wetlands

SUPPLEMENTAL INFORMATION:

Area has previously been used as a snow dump site which has resulted in problems with trash and oily residue after snowmelt.

1"=100 feet MOA Map 1830

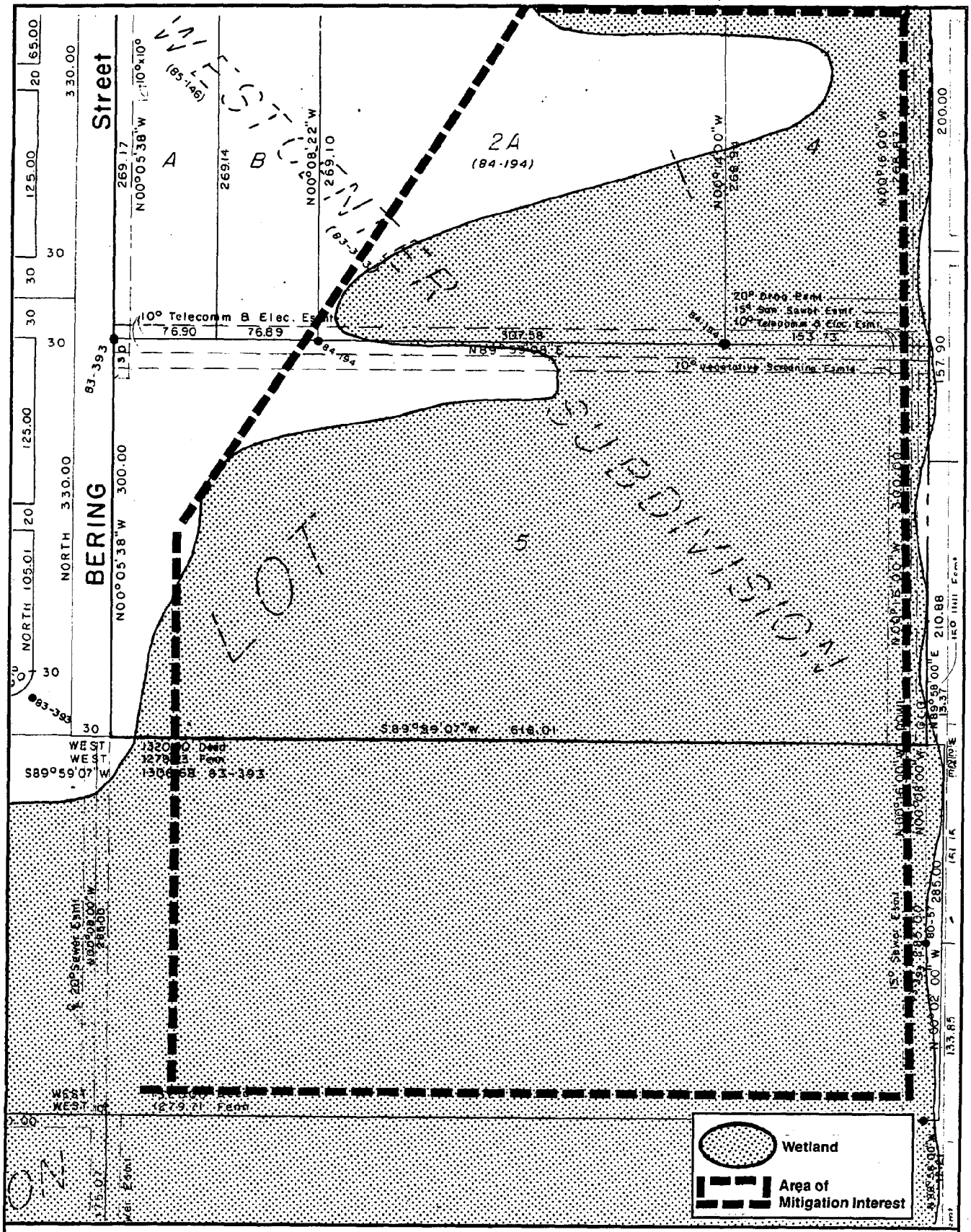
POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement ___X___ Acquisition ___X___

High priority is placed on this wetland for acquisition.

do not allow future use as a snow dump site; buffer area from development impacts; maintain clean water and insure adequate water supply to continue function of wetland

Recognized limitations to site include limited open water availability, presence of surrounding development, and lack of habitat diversity. This wetland has been identified by MOA for acquisition under USFWS Wetlands Concept Plan.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A29	Site Name: BUSINESS PARK WETLANDS	MOA Wetland No.: 13	Prepared by: Resource Analysts 7/88	Scale: 1"=100'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A30
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: WETLAND EAST OF C STREET AND SOUTH OF TUDOR ROAD

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 13

MOA WETLAND MAP SHEET (1982 COVERAGE): A43

MOA AERIAL PHOTO: Date 1985 Number 6-10, 6-11

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: B-3 SL

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	
Nutrient Retention & Removal	
Food Chain Support	
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

high water table bog environment with limited open water areas occurring naturally; small pond with vegetated margins at south end of disturbed area used as discharge point for dewatering excavation; area currently being mined for peat/topsoil with extensive excavation

SOILS:

The soils in the area are typically moderate to high permeability alluvial deposits with significant amounts of silt, clay and fine sand overlain by peat (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

spruce bog wetland dewatered for peat excavation; open water habitat limited to dewatering pond site; surrounding vegetative community of birch non-wetland plants indicates drier environment due to dewatering activity

FISH AND WILDLIFE USE:

A portion of area is dewatered to allow excavation of peat. Water pumped to holding pond on south end of site attracts waterfowl and geese which nest in the wetlands and utilize the open water area.

HUMAN USE:

proximity to C Street gives high visibility and familiarity to the site; geese and ducks with broods commonly observed feeding on planted roadway vegetation along east side of C Street adjacent to the wetland area

HYDROLOGY:

Watershed: originally drained to Fish Creek
Location within watershed: headwaters of tributary to Fish Creek that has apparently been isolated from Fish Creek by development

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: none
Surface runoff inflow: receives minor input from local area
Groundwater inflow/outflow: there may be a minor net groundwater outflow from the site
Storage capacity: moderate storage; minor effect on creek flows downstream

Water Quality Components:

Wetland quality: probably minor water quality improvement capacity within wetland
Pollutant sources: pollution sources include current mining of peat at the north end and the adjacent roads

SUPPLEMENTAL INFORMATION:

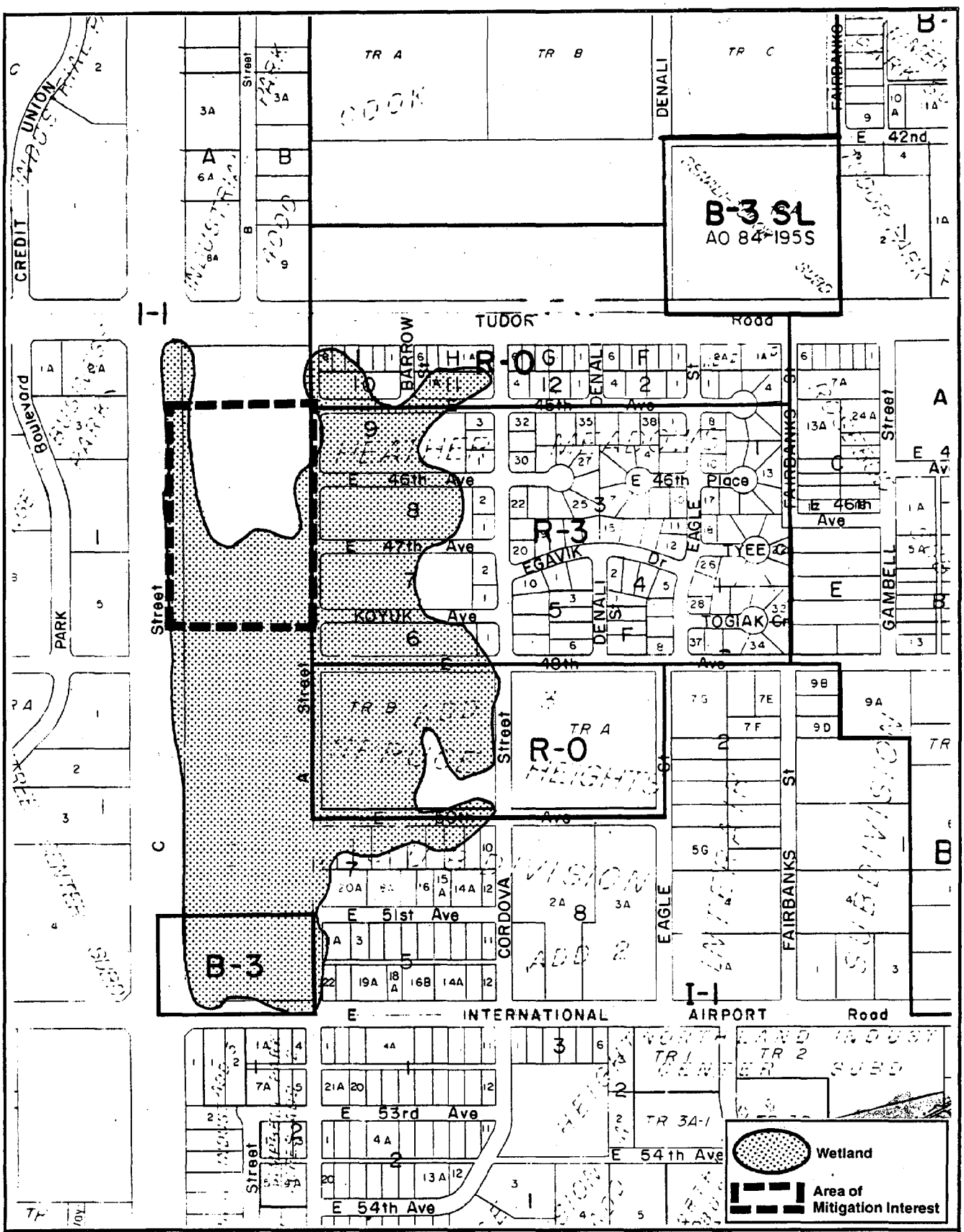
need to obtain information on final plans for disposition of the site after peat/topsoil operation is completed

1"=100 feet MOA Map 1830

POTENTIAL MITIGATION ACTIONS:

Restoration ___X___ Enhancement ___X___ Acquisition ___X___

Ditched wetlands and dewatered areas need to be returned to productive wetland habitat. Availability of adequate water to maintain a wetland community in the excavation is unknown. If the water table is adequately high, shallow depressions in areas adjoining the open pit may be developed to hold water throughout the nesting and rearing season. Protect area from further peat stripping. Evaluate the feasibility of acquisition.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A30	Site Name: WETLAND EAST OF C ST. SOUTH OF TUDOR	MOA Wetland No.: 13	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A31
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: WETLANDS S. OF Z.J. LOUSSAC LIBRARY

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 13

MOA WETLAND MAP SHEET (1982 COVERAGE): A31

MOA AERIAL PHOTO: Date 1985 Number 6-11, 6-12

WETLAND OWNERSHIP: MOA X Public _____ Private X

ZONING: B-3 SL (General and Strip Commercial Business District - Special Limitations), R-3 (Multiple Family Residential District)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

open water pond with vegetated wetland margin; smaller open water areas are present throughout the wetland; area has been disturbed but has revegetated naturally with willows and grasses

SOILS:

The soils in the area are typically moderate to high permeability alluvial deposits with significant amounts of silt, clay and fine sand overlain by peat (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

disturbed remnants of Heather Meadows; limited open water, some natural revegetation by aquatic plant species

FISH AND WILDLIFE USE:

waterfowl, Canada geese, yellowlegs, gulls, and other shorebirds utilize the area for feeding; occurrence of nesting unknown

HUMAN USE:

open space, bird viewing, hiking

HYDROLOGY:

Watershed: originally drained to Fish Creek
Location within watershed: adjacent to old Fish Creek alignment with uncertain current hydrologic connection to Fish Creek

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: none likely
Surface runoff inflow: receives minor input from local area
Groundwater inflow/outflow: there may be a minor net groundwater outflow from the site
Storage capacity: moderate storage; minor effect on creek flows downstream

Water Quality Components:

Wetland quality: probably moderate water quality improvement capacity within wetland
Pollutant sources: no major pollution sources

SUPPLEMENTAL INFORMATION:

area may be within 17-acre parcel designated for a MOA park

1"=100 feet MOA Map 1731

POTENTIAL MITIGATION ACTIONS:

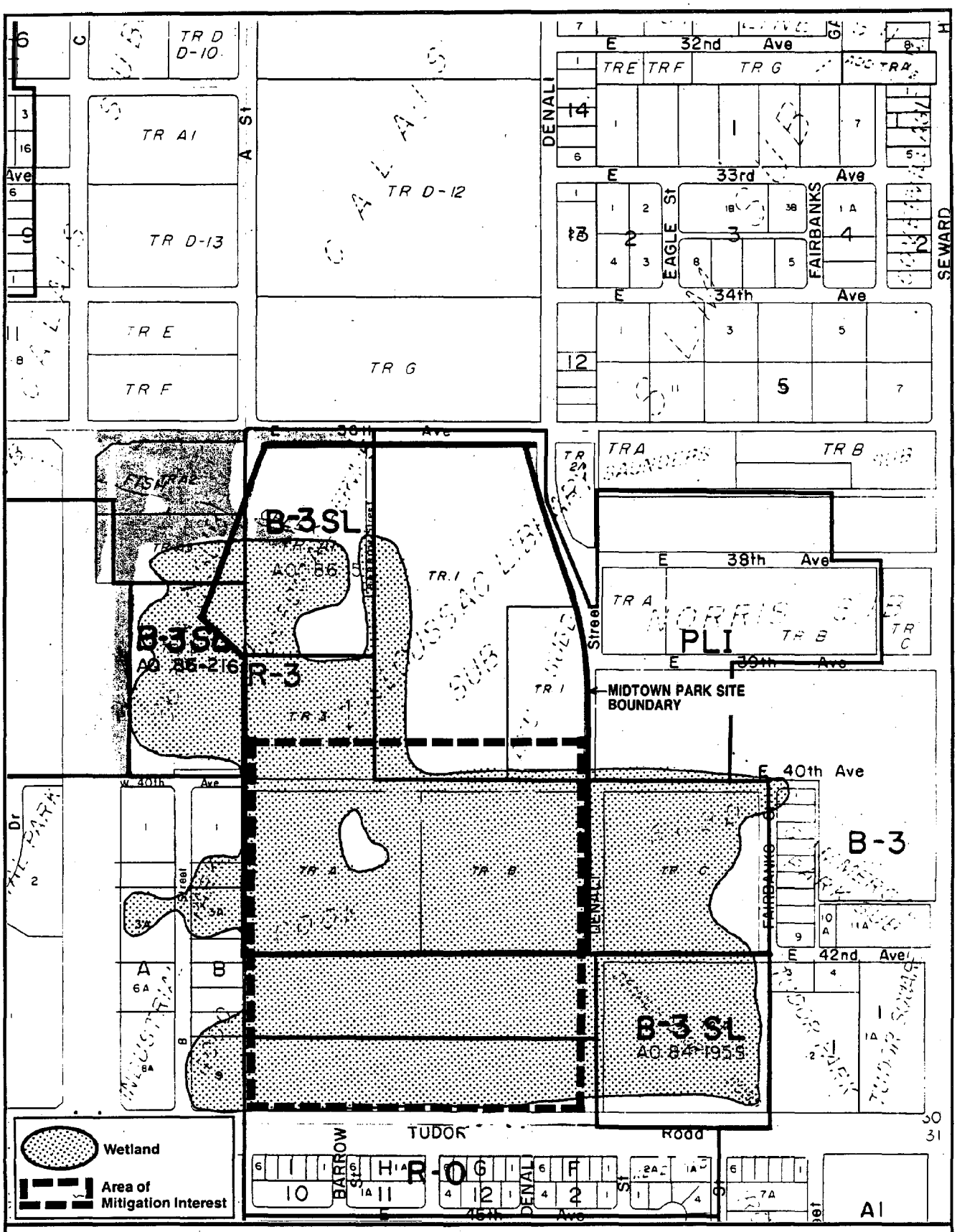
Restoration ___X___ Enhancement ___X___ Acquisition _____

The presence of the pond suggests a high water table or adequate surface runoff which could provide constructed, open water areas attractive to waterfowl.

evaluate development of interconnected, shallow depressions; wetland vegetation could be enhanced to provide food and cover for

waterbirds; pond habitat could be enhanced by contouring, revegetating, and ensuring presence of adequate water; areas previously disturbed could be restored to wetland functions for waterbird habitat

Consider future development of MOA park to provide wildlife viewing and open space in a manner which compliments the wetland values



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A31	Site Name: WETLANDS SOUTH OF Z.J. LOUSSAC LIBRARY	MOA Wetland No.: 13	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A32
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: LAKE OTIS/TUDOR ROAD WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 17

MOA WETLAND MAP SHEET (1982 COVERAGE): A32

MOA AERIAL PHOTO: Date 1985 Number 7-15

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: R3

WETLAND FUNCTIONS: (prior to development disturbance)

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

sedge wetlands and open water ponds associated with the headwaters of Fish Creek; open stream channel originally passed through wetlands; large portion of wetlands filled by developer north of Tudor Road

SOILS:

The soils in the area are typically high to very high permeability alluvial sandy gravel deposits overlain by peat (Freethey, 1976).

Depth to water table: less than 10 feet (Freethey et al., 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

The majority of the wetland is filled but not developed. A remnant of original wetland is present along margin of the fill to west and north. Man-made stream channel along toe of fill is non-functional.

FISH AND WILDLIFE USE:

prior to filling activity, area supported waterfowl nesting

HUMAN USE:

waterfowl and wildlife viewing, open space; area has high visibility to public

HYDROLOGY:

surface hydrology now severely altered; some surface flow through culverts under Lake Otis Parkway from McLaughlin and Alaska Psychiatric Institute

Watershed: originally Fish Creek
Location within watershed: headwaters of old Fish Creek

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: a small amount of inflow passes through culverts under Lake Otis Parkway; outflow unknown
Surface runoff inflow: receives minor input from local area
Groundwater inflow/outflow: there may be a minor net groundwater outflow from the site
Storage capacity: moderate storage; minor effect on creek flows downstream

Water Quality Components:

Wetland quality: probably moderate water quality improvement capacity within wetland
Pollutant sources: runoff from fill placed in wetland and from adjacent development may contribute sediments and other pollutants

SUPPLEMENTAL INFORMATION:

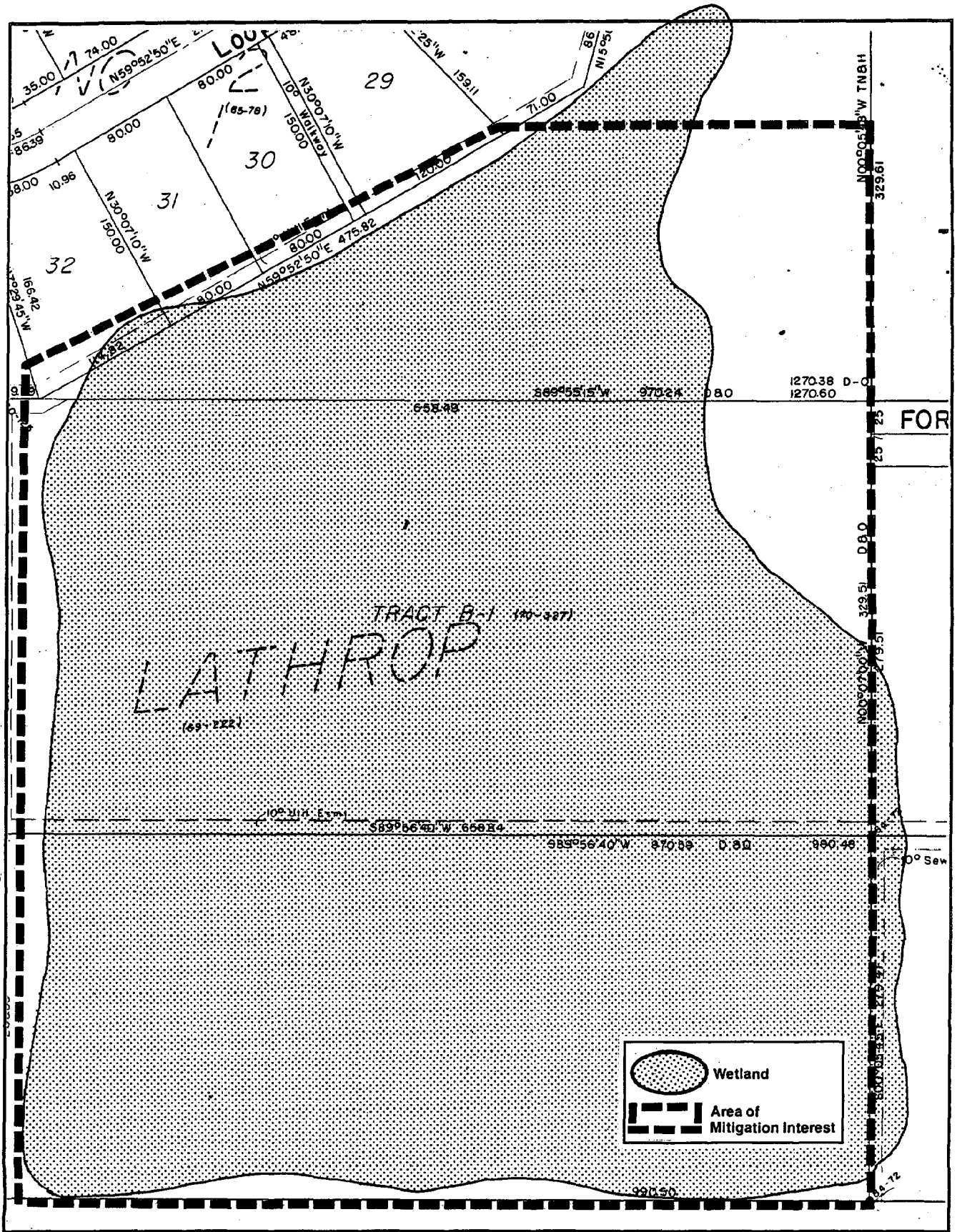
"Mitigation" for initial fill action was to provide channel around toe of fill with very narrow vegetated buffer. The action was ineffective and surface flow in channel is negligible. The water level of remaining wetland may have dropped from pre-disturbance condition. The fill pad has never been developed.

1"=100 feet MOA Map 1733

POTENTIAL MITIGATION ACTIONS:

Restoration ___X___ Enhancement ___X___ Acquisition ___X___

Acqusition is recommended. The fill should then be removed and an attempt made to restore wetland features including meandering flow channel, interconnected open water ponds, and wetland vegetation in shallow water. Culverts under Lake Otis Parkway should be fixed to restore surface flow. Water flow to Waldron wetlands on south side of Tudor Road should be maintained.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A32	Site Name: LAKE OTIS/TUDOR ROAD WETLANDS	MOA Wetland No.: 17	Prepared by: Resource Analysts 7/88	Scale: 1"=100'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A33
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: WALDRON LAKE

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 17

MOA WETLAND MAP SHEET (1982 COVERAGE): A44

MOA AERIAL PHOTO: Date 1985 Number 7-14, 7-15

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: PLI (Public Lands and Institutions)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	
Flood Storage & Desynchronization	
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

Waldron Lake is a man-made, open water lake with poorly developed wetland margins; the lake is surrounded by grassy athletic fields and an unvegetated berm

SOILS:

The soils in the area are typically high to very high permeability alluvial sandy gravel deposits (Freethey, 1976).

Depth to water table: at surface in lake and less than 10 ft adjacent to lake (Freethey, et al. 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

constructed lake, limited wetland development on the periphery

FISH AND WILDLIFE USE:

Waterfowl utilize Waldron Lake, but the wetland may not provide nesting habitat.

HUMAN USE:

Waldron Lake is in an existing park and is used as open space and for waterfowl viewing.

HYDROLOGY:

Watershed: between the Fish Creek and Campbell Creek drainage basins
Location within watershed: divide between basins

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: none known
Surface runoff inflow: receives minor input from local area
Groundwater inflow/outflow: lake levels may be maintained by relatively high water table; needs to be verified
Storage capacity: minor storage; minimal effect on creek flows downstream

Water Quality Components:

Wetland quality: probably minor water quality improvement capacity within site
Pollutant sources: no pollution sources have been identified

SUPPLEMENTAL INFORMATION:

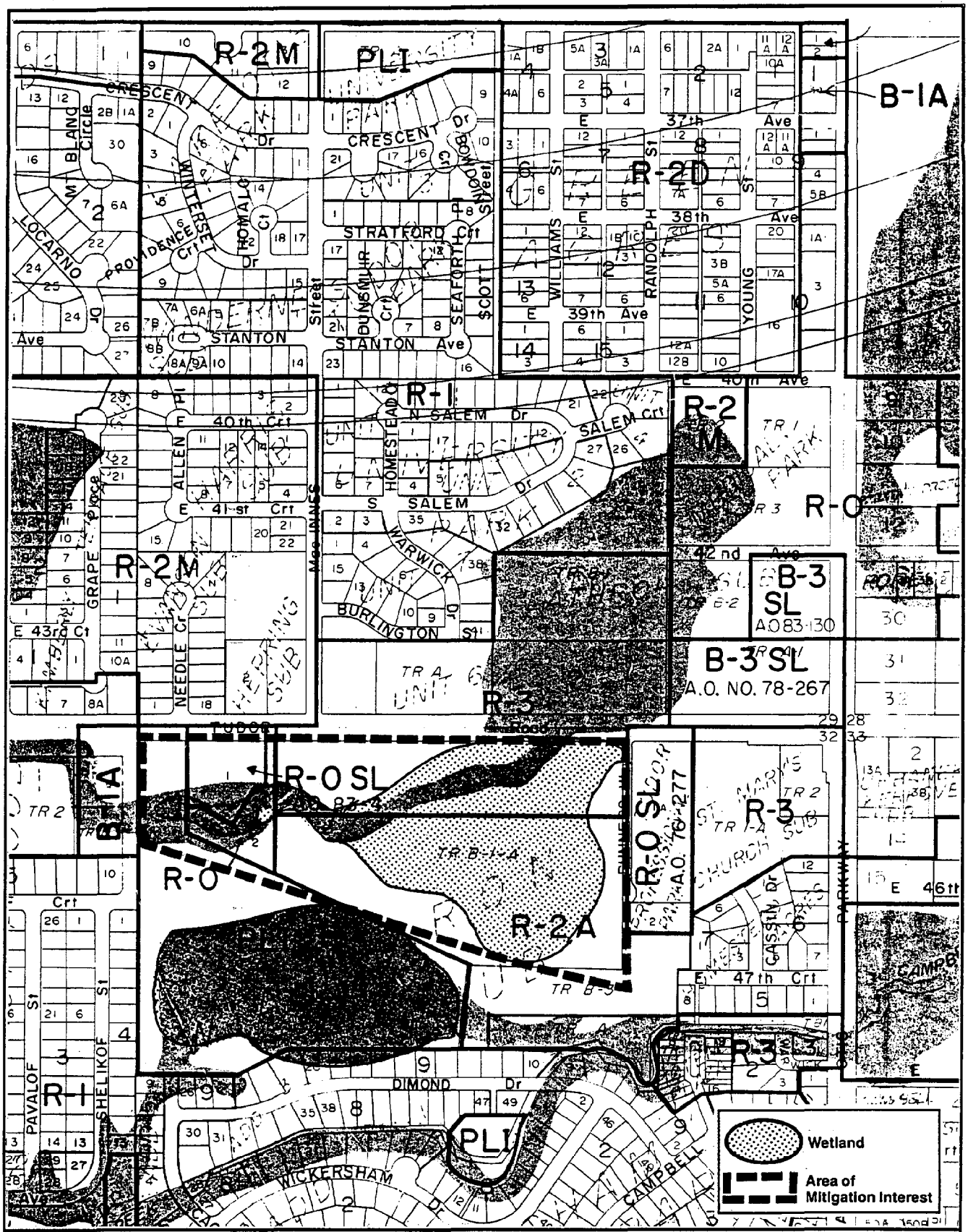
St. Mary's Church at corner of Lake Otis Parkway and Tudor Road may own the wetlands adjacent to the south side of Tudor Road

1"=100 feet MOA Map 1833

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement __X__ Acquisition _____

maintain water source; control encroaching recreational development; enhance Waldron lake wetland margins to improve habitat for waterfowl; improve shoreline diversity; encourage wetland plant revegetation; build vegetated islands in Waldron lake for waterfowl nesting



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A33	Site Name: WALDRON LAKE	MOA Wetland No.: 17	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A34
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: WALDRON WETLANDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 17

MOA WETLAND MAP SHEET (1982 COVERAGE): A44

MOA AERIAL PHOTO: Date 1985 Number 7-14, 7-15

WETLAND OWNERSHIP: MOA X Public _____ Private _____

ZONING: R-3 (Multiple Family Residential), R-2A (2 Family Residential - Large Lot), R-0 (Residential-Office District), R-0 SL (Residential - Office District with Special Limitations)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

headwaters wetland for Fish Creek; open water pond with emergents, waterlilies; sedge wetlands adjoining open water channels extends south from Tudor Road

SOILS:

The soils in the area are typically high to very high permeability alluvial sandy gravel deposits overlain by peat (Freethey, 1976).

Depth to water table: may be near surface
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

white spruce uplands surrounding open meadow wetlands with interconnected open water areas, waterlilies, emergent aquatic vegetation

FISH AND WILDLIFE USE:

Wetland important to waterbirds for nesting, feeding, resting. Area is buffered by uplands from surrounding development and disturbance. Wetlands are utilized by moose.

HUMAN USE:

wildlife viewing, open space

HYDROLOGY:

Watershed: originally Fish Creek
Location within watershed: headwaters of old Fish Creek

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: inflow sources are unknown
Surface runoff inflow: receives minor input from local area
Groundwater inflow/outflow: there may be a minor net groundwater outflow from the site
Storage capacity: moderate storage; moderate effect on creek flows downstream

Water Quality Components:

Wetland quality: probably moderate water quality improvement capacity within wetland
Pollutant sources: no pollution sources have been identified

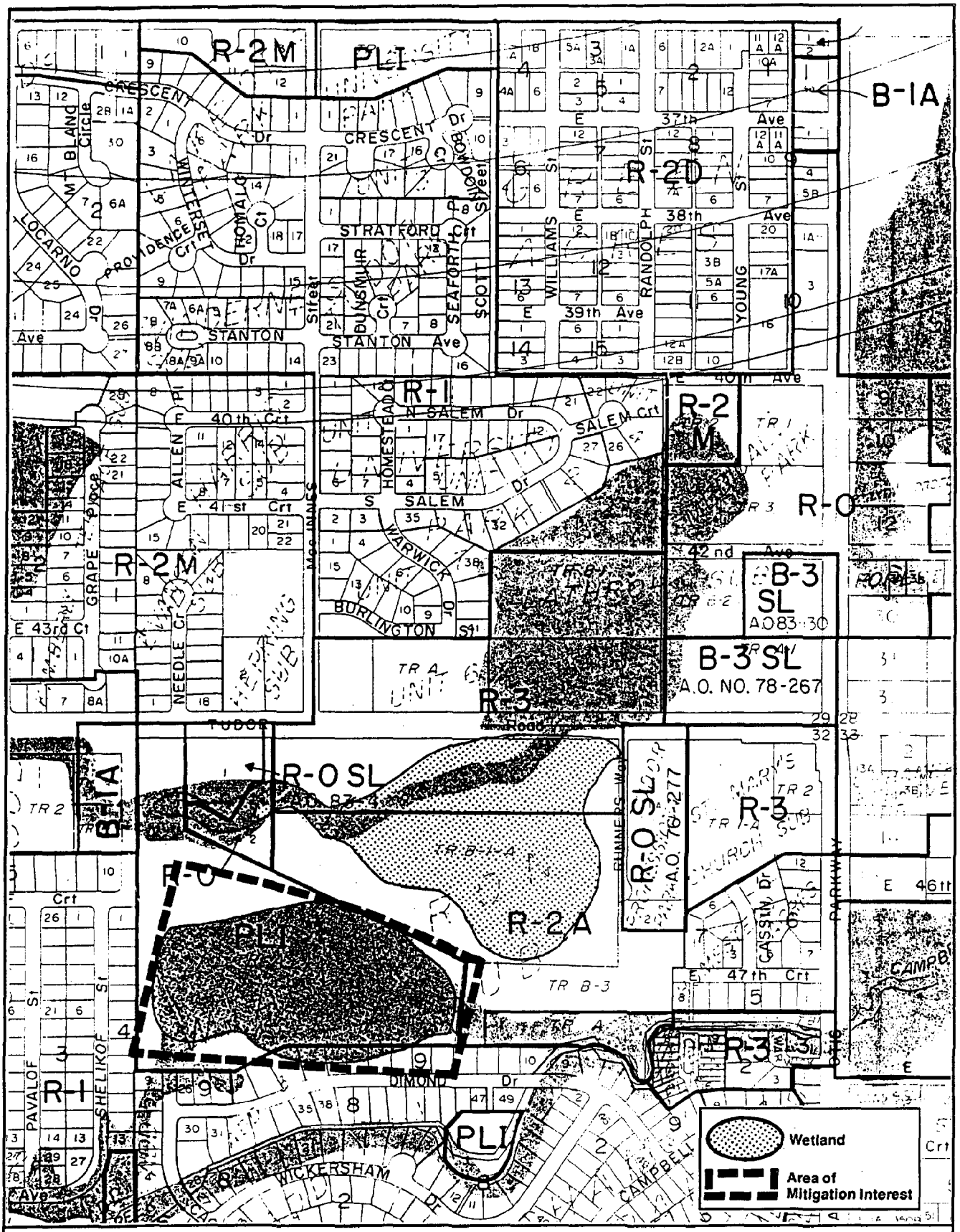
SUPPLEMENTAL INFORMATION:

1"=100 feet MOA Map 1833

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement _____ Acquisition ___X___

Waldron wetlands are presently undisturbed, although the effects of development activity in the headwaters north of Tudor Road area is unknown. This area provides high quality waterbird habitat in a protected and buffered setting. Acquistion is recommended to protect the area from disturbance and maintain its function.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A34	Site Name: WALDRON LAKE WETLANDS	MOA Wetland No.: 17	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A35
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: TUDOR PARK PONDS

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): N/A

MOA WETLAND MAP SHEET (1982 COVERAGE): A34

MOA AERIAL PHOTO: Date 1985 Number 8-15

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: R-O SL (Residential-Office District with Special Limitations), B-3 (General and Strip Commercial Business District)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

Wetland is comprised of flooded gravel pits with minimal vegetative development along shoreline. Pit profile does not provide much shallow water area. Several islands are present.

SOILS:

The soils in the area are typically high to very high permeability alluvial sandy gravel deposits (Freethey, 1976).

Depth to water table: at surface in lake and less than 10 ft adjacent to lake (Freethey, et al. 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

created wetland; lake margins are steep with minimal shallow water shelf for wetland development; shoreline vegetation is principally grasses

FISH AND WILDLIFE USE:

some use by ducks and geese for nesting; level of bird use unknown; ADF&G to stock Tudor Park ponds with rainbow trout in June 1988

HUMAN USE:

waterfowl viewing, open space, ice skating, boating

HYDROLOGY:

Watershed: South Fork Chester Creek
Location within watershed: off channel; not connected

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986)
Tidal influence: none
Stream channel inflow/outflow: none known
Surface runoff inflow: receives minor input from local area
Groundwater inflow/outflow: lake levels may be maintained by relatively high water table; needs to be verified
Storage capacity: minor storage; minimal effect on creek flows downstream

Water Quality Components:

Wetland quality: probably minor water quality improvement capacity within site
Pollutant sources: no pollution sources have been identified

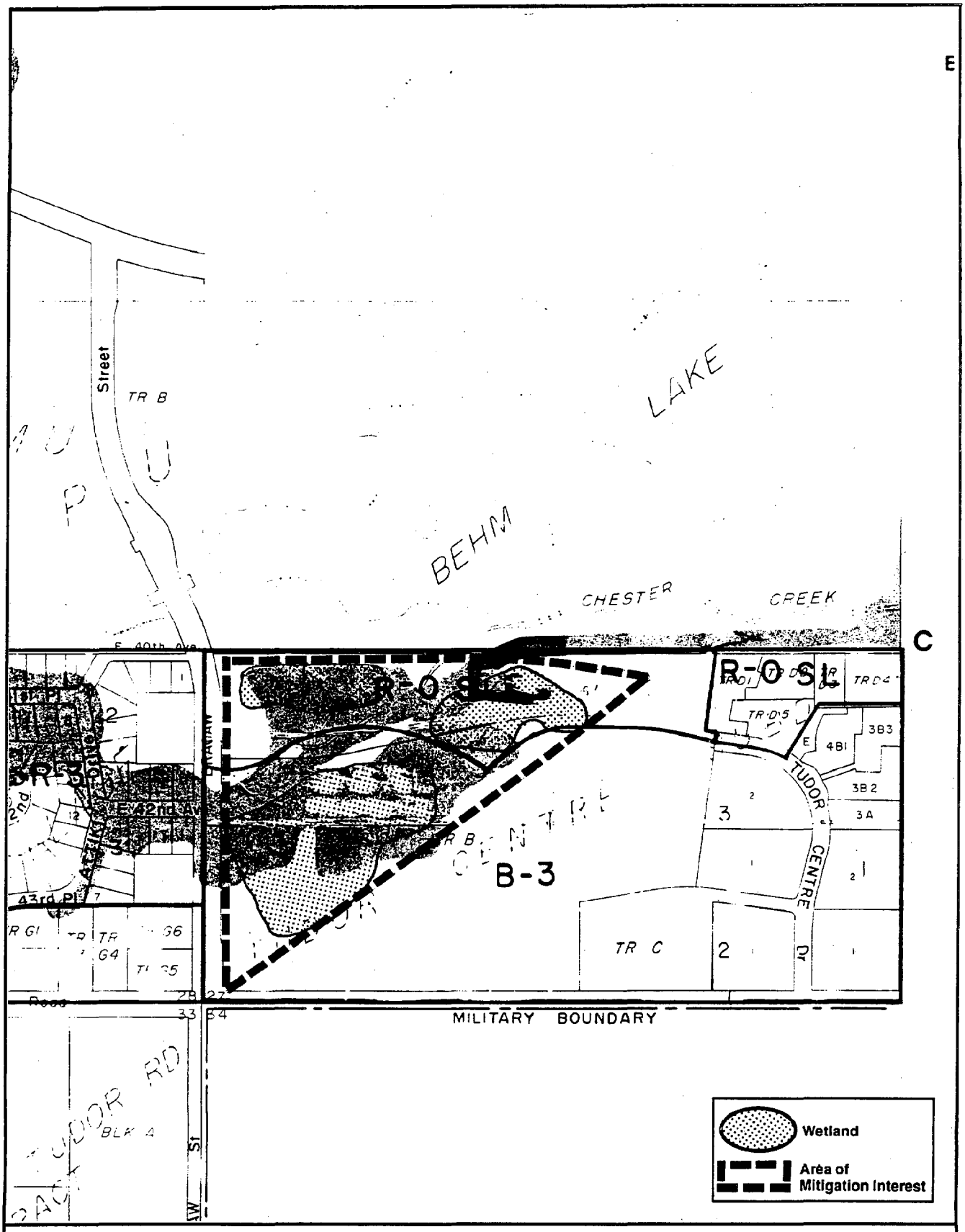
SUPPLEMENTAL INFORMATION:

1"=100 feet MOA Map 1736

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement __X__ Acquisition _____

possible enhancement of gravel pits to improve waterbird habitat; construction of shallow, sloping shoreline to encourage development of wetland vegetation; consider addition of more low-profile islands to provide undisturbed nesting locations; evaluate the need for additional water in the lakes and consider controlled use of peak flows from nearby Chester Creek which has been diverted through University Lake



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A35	Site Name: TUDOR PARK PONDS	MOA Wetland No.: N/A	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A36
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: BAXTER BOG

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 44

MOA WETLAND MAP SHEET (1982 COVERAGE): A35

MOA AERIAL PHOTO: Date 1985 Number 9-19, 9-20

WETLAND OWNERSHIP: MOA X Public _____ Private _____

ZONING: R-1 (1 Family Residential), R-2A (2 Family Residential - Large Lot), R-2M (Multiple Family Residential), R-2M SL and R-3 SL (Multiple Family Residential with Special Limitations)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

black spruce bog wetland with little open water development; high water table

SOILS:

The soils in the area are typically high to very high permeability alluvial sandy gravel deposits overlain by peat (Freethey, 1976).

Depth to water table: probably at surface in pond and less than 10 ft adjacent to pond (Freethey, et al. 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

Basin bog is covered by open, low shrub/scrub and needleleaf woodland vegetation (Hogan and Tande, 1983). Baxter Lake located in the western portion of the wetland is a long, narrow bog lake. Drainage is north-northeast but has been interrupted by a sewerline extension and drainage ditches through the center of the area. The western half of the bog remains saturated, but the eastern half supports drier flora and the sphagnum/feathermoss peat is not saturated.

FISH AND WILDLIFE USE:

37 species of birds have been observed in the bog area, and at least 17 of these were breeding in Baxter Bog. Species richness is greatest during the breeding season. Waterfowl use of the bog is greater in the vicinity of Baxter Lake where the open water attracts breeding and migrating birds. Common and conspicuous waterbirds include Canada geese, wigeon, pintail, bufflehead, mallard, green-winged teal, least sandpiper, and common snipe. Baxter Bog has shown some of the highest bird species diversity of wetlands studied in the Anchorage Bowl.

HUMAN USE:

wildlife viewing, open space, cross country skiing, hiking

HYDROLOGY:

Watershed: South Fork Chester Creek
Location within watershed: tributary basin

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: none known
Surface runoff inflow: receives input from moderate drainage area
Groundwater inflow/outflow: groundwater flow from east to west (Dearborn and Freethey, 1974); may have net groundwater inflow to the wetland
Storage capacity: moderate to large storage; moderate effect on creek flows downstream

Water Quality Components:

Wetland quality: probably high water quality improvement capacity within site
Pollutant sources: local adjacent development may introduce sediments and other pollutants

SUPPLEMENTAL INFORMATION:

Baxter Bog is surrounded by residential development; filled areas extend into the wetland on the east, south, and west sides.

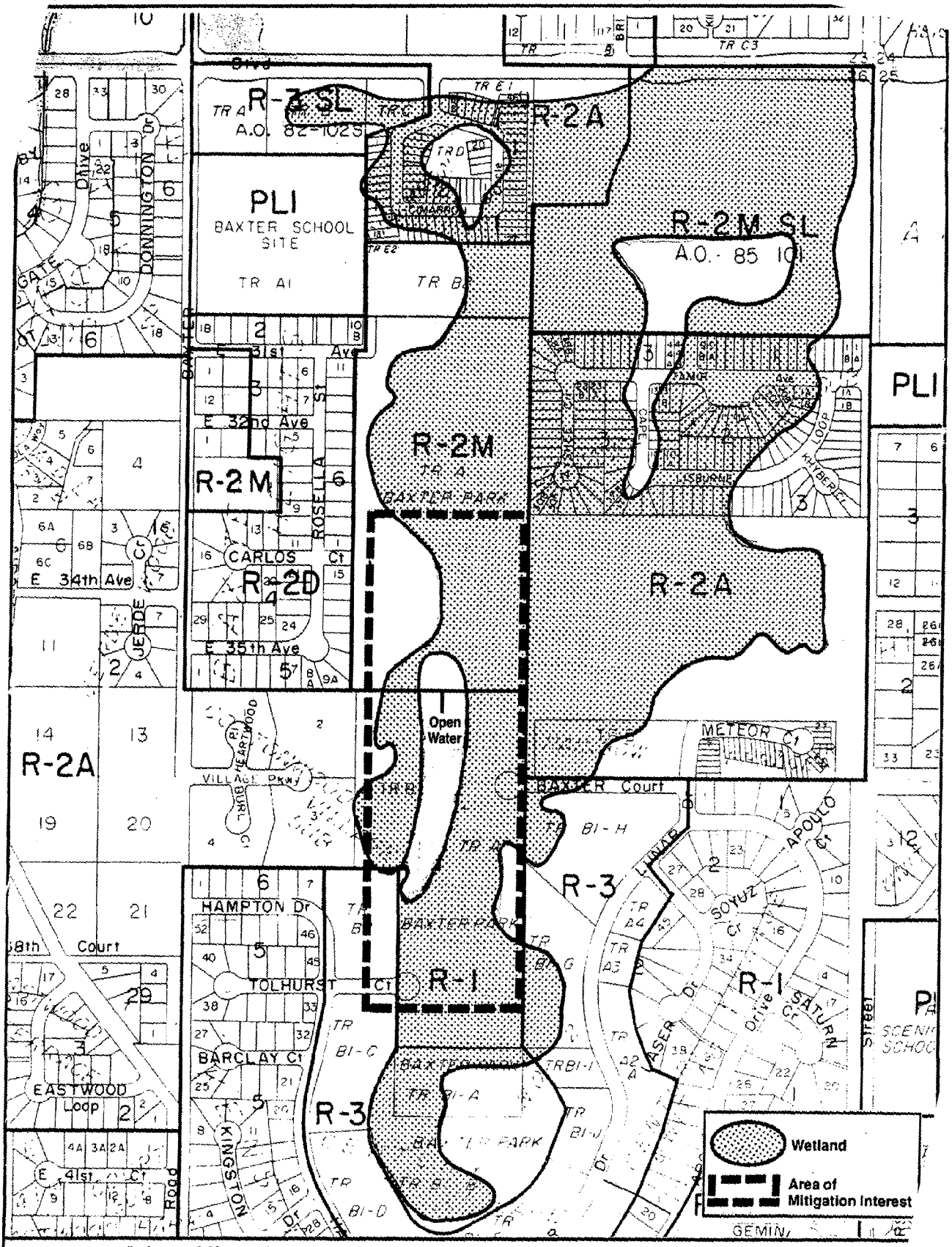
1"=100 feet MOA Map 1639

POTENTIAL MITIGATION ACTIONS:

Restoration ___X___ Enhancement ___X___ Acquisition _____

evaluate potential for expansion of open water/emergent zone to south; examine possibility of removing fill along west side of bog (see MOA Chester Creek 10 permit file)

Much of bog area is currently homogeneous and of low value to wildlife since it provides little or no open water wetland habitat.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

ROG	MOA Wetland No.: 44	Prepared by: Resource Analysts 7/88	Scale: 1"=

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A37
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: SITKA STREET PARK

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 15

MOA WETLAND MAP SHEET (1982 COVERAGE): A21

MOA AERIAL PHOTO: Date 1985 Number 7-17, 7-18

WETLAND OWNERSHIP: MOA X Public _____ Private _____

SITE SPECIFIC WETLANDS STUDIES: The North Fork Chester Creek originating/culverted under the closed Merrill Field Landfill is currently under study by Montgomery Engineers.

ZONING: PLI (Public Lands and Institutions), R-3 (Multiple Family Residential District)

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

North Fork Chester Creek currently flows through a ditch adjacent to Sitka Street from DeBarr to Chester Creek; proposal is to relocate flow from ditch and meander through preservation wetlands located to the west

SOILS:

The soils in the area are typically high to very high permeability alluvial sandy gravel deposits (Freethey, 1976). Underlying this layer is a low permeability layer of silty clay or gravelly sand and silt (Nelson, 1982).

Depth to water table: less than 10 ft below surface (Still and Brunett, 1987; Freethey, et al. 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

Wetland west of current alignment of North Fork Chester Creek is open black spruce with limited open water and emergent vegetation.

FISH AND WILDLIFE USE:

Warm water emanating from closed Merrill Field landfill provides open water throughout the winter for ducks. Dolly Varden up to 12 inches have been observed in the channelized area of the North Fork Chester Creek. ADF&G will be stocking main Chester Creek with rainbow trout for the first time during 1988.

HUMAN USE:

wildlife viewing, open space

HYDROLOGY:

Watershed: North Fork Chester Creek/Chester Creek
Location within watershed: originally adjacent to North Fork Chester Creek but now a tributary basin to Chester Creek

Water Balance Components:
- Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
- Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
- Tidal influence: none
- Stream channel inflow/outflow: none known; may have outlet channel where old North Fork used to be
- Surface runoff inflow: wetland currently receives input from minor drainage area immediately adjacent to the site
- Groundwater inflow/outflow: may have net groundwater outflow from the wetland
- Storage capacity: moderate storage; minor effect on creek flows downstream

Water Quality Components:
- Wetland quality: probably moderate water quality improvement capacity within site
- Pollutant sources: local adjacent development may introduce sediments and other pollutants

Comments: North Fork Chester Creek formerly flowed through wetland to the west of current stream alignment; channel is presently in a large culvert under the landfill.

SUPPLEMENTAL INFORMATION:

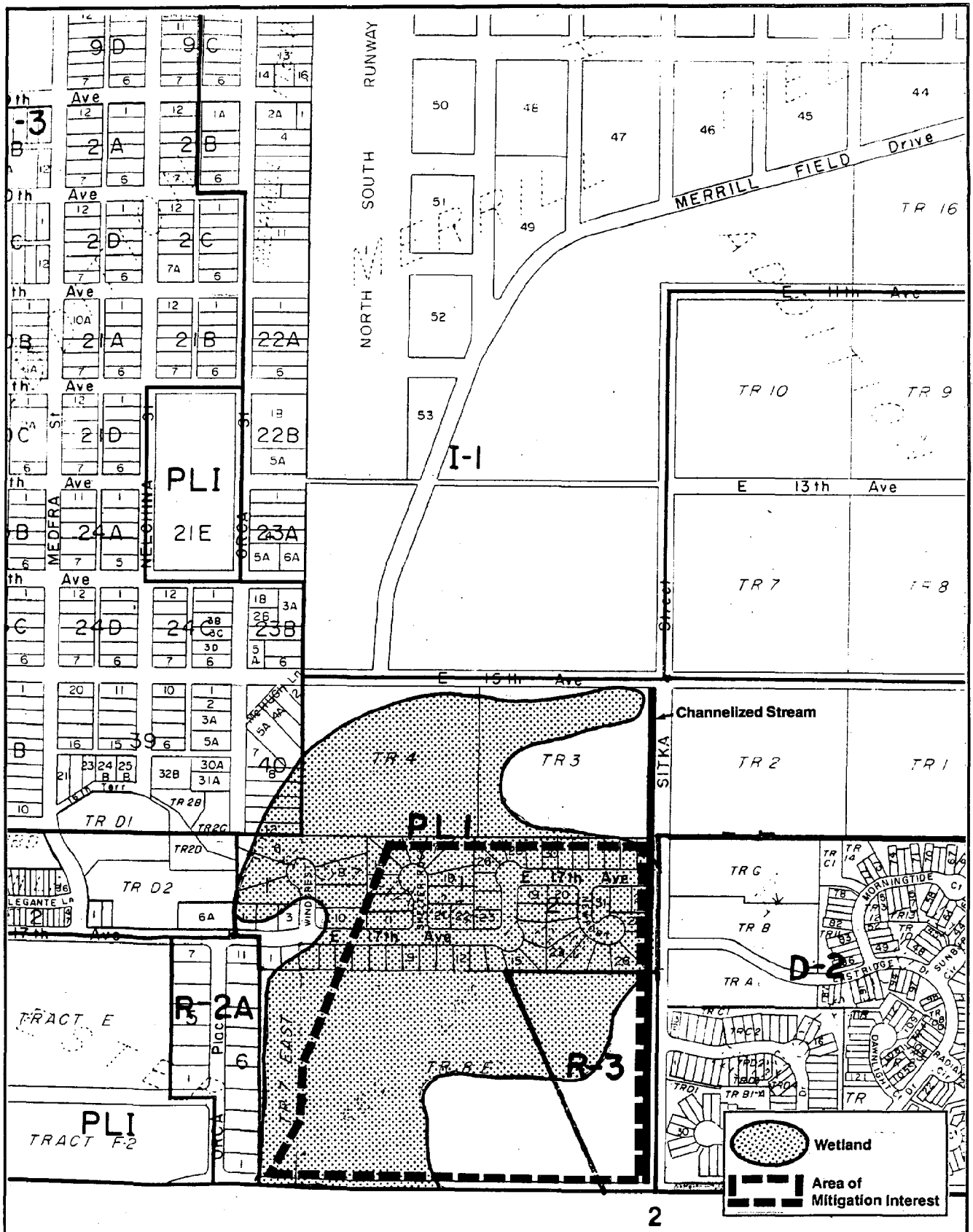
Sitka Steet Park located west of North Fork Chester Creek alignment in wetland; MOA snow dump site located east Sitka Street and south of DeBarr Road

1"=100 feet MOA Map 1433

POTENTIAL MITIGATION ACTIONS:

Restoration ___X___ Enhancement ___X___ Acquisition _____

restore flow of North Fork Chester Creek through MOA Preservation Wetlands west of Sitka Street; evaluate engineering feasibility of relocating creek from ditch adjacent to Sitka Street into wetland, possibly south of the higher elevation habitat located west of Sitka Street/DeBarr intersection; stream course could be meandered with interconnected open water ponds to take advantage of warm water for winter habitat for ducks; would require investigation of elevations of channel bed and wetland to see if the creek could be routed through the area



2

Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A37	Site Name: SITKA STREET PARK	MOA Wetland No.: 15	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A38
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: LAKE OTIS PARKWAY / DEBARR ROAD WETLAND

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 15

MOA WETLAND MAP SHEET (1982 COVERAGE): A21

MOA AERIAL PHOTO: Date 1985 Number 7-17, 7-18

WETLAND OWNERSHIP: MOA X Public _____ Private _____

SITE SPECIFIC WETLAND STUDIES: 1988 snowdump expansion site

ZONING: PLI

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

open black spruce wetland southwest of Lake Otis Parkway/DeBarr Road intersection; high water table but no well developed open water habitat

SOILS:

The soils in the area are typically high to very high permeability alluvial sandy gravel deposits (Freethey, 1976). Underlying this layer is a low permeability layer of silty clay or gravelly sand and silt (Nelson, 1982).

Depth to water table: probably less than 10 ft below surface (Still and Brunett, 1987; Freethey et al. 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

small area of black spruce wetland; Lake Otis Parkway and DeBarr Road on two sides, MOA snow disposal site downslope to the west

FISH AND WILDLIFE USE:

limited waterbird use in spring when breakup occurs

HUMAN USE:

wildlife viewing, open space

HYDROLOGY:

Watershed: North Fork Chester Creek
Location within watershed: originally adjacent to North Fork Chester Creek but now a tributary basin, upbasin from a snow disposal site

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: none known; may have outlet channel through the snow disposal site
Surface runoff inflow: wetland receives input from very minor drainage area immediately adjacent to the site
Groundwater inflow/outflow: may have net groundwater outflow from the wetland
Storage capacity: minor storage; minor effect on creek flows downstream

Water Quality Components:

Wetland quality: probably minor water quality improvement capacity within site
Pollutant sources: local adjacent roads and development, including the snow disposal site, may introduce sediments and other pollutants

Comments: North Fork Chester Creek used to run very near this small pond, crossing 15th just west of the intersection with Lake Otis Parkway.

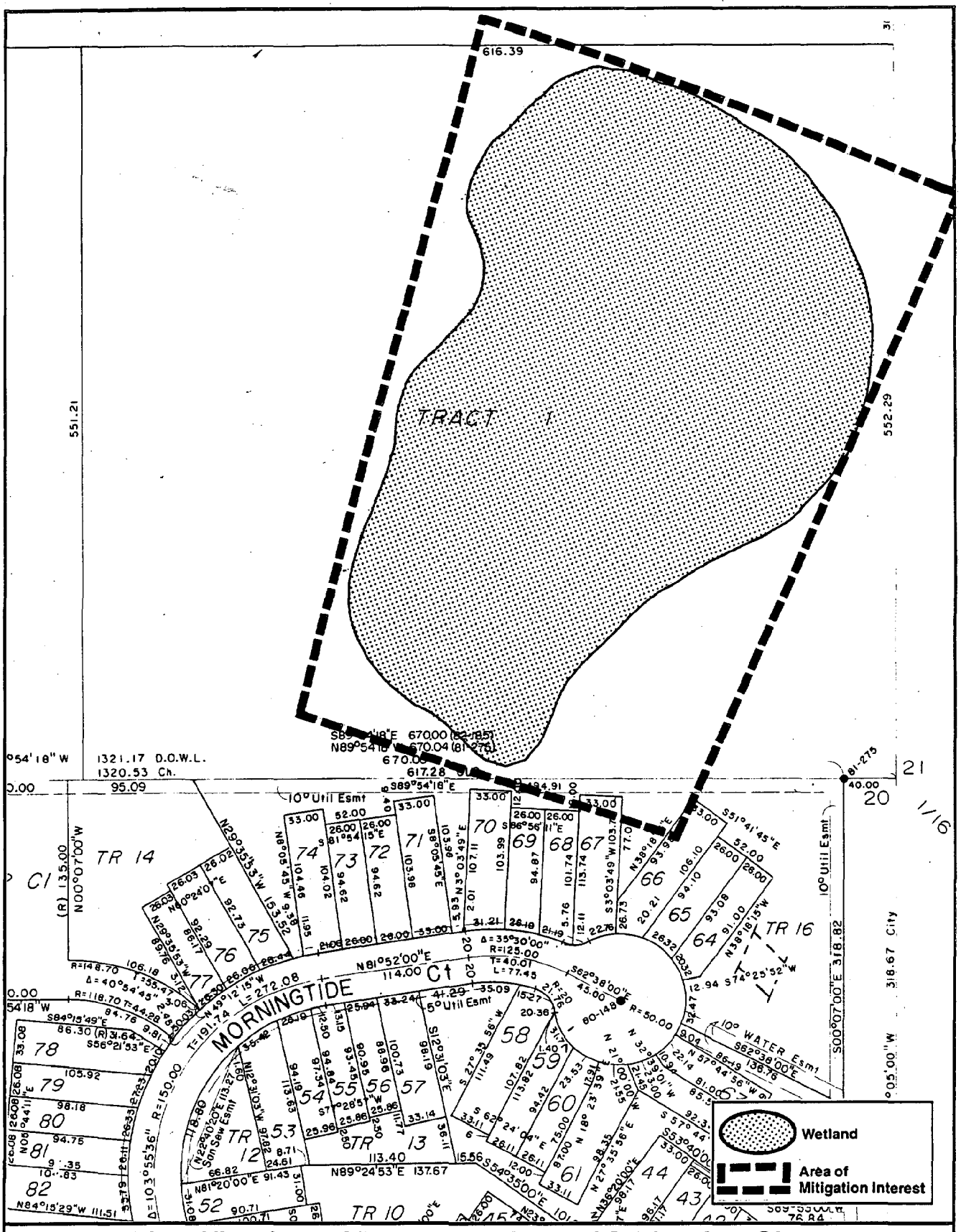
SUPPLEMENTAL INFORMATION:

1"=100 feet MOA Map 1433

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement ___X___ Acquisition _____

At the present time, approximately one-half of the wetlands at this site are proposed for expansion of the existing snow dump site; within the wetlands which will be undisturbed, create swales and shallow depressions to provide open water habitat which may attract waterfowl.



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A38	Site Name: LAKE OTIS PARKWAY DEBARR RD. WETLANDS	MOA Wetland No.: 15	Prepared by: Resource Analysts 7/88	Scale: 1"=100'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: A39
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: ANCHORAGE BOWL

LOCATION NAME: PINE VALLEY

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 46

MOA WETLAND MAP SHEET (1982 COVERAGE): A23

MOA AERIAL PHOTO: Date 1985 Number 9-20, 9-21

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: area of interest is primarily PLI

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

open sedge and cottongrass meadow with limited open water in west portion of site, drier conditions to south toward Northern Lights Blvd; small site outflow across extension of Pine Street right-of-way into Middle Fork Chester Creek

SOILS:

The soils in the area are typically high to very high permeability alluvial sandy gravel deposits overlain by peat (Freethey, 1976).

Depth to water table: less than 10 ft (Freethey, et al. 1974)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

emergent sedge and cottongrass community along margins of open water areas and in wetter portions of the site; open water and shallow flooded areas have soft bottoms of organic debris

FISH AND WILDLIFE USE:

Dolly Varden, sculpins, rearing habitat for juvenile coho salmon in Middle Fork Chester Creek (wetland outflow to stream); limited local fishery for Dolly Varden; waterfowl nesting and feeding

HUMAN USE:

wildlife viewing, open space, hiking, cross country skiing

HYDROLOGY:

Watershed: Middle Fork Chester Creek
Location within watershed: tributary basin

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986b)
Tidal influence: none
Stream channel inflow/outflow: no inlet known; outlet partly blocked by fill
Surface runoff inflow: wetland receives input from minor drainage area immediately adjacent to the site
Groundwater inflow/outflow: may have net groundwater inflow to the wetland
Storage capacity: moderate storage; minor effect on creek flows downstream

Water Quality Components:

Wetland quality: probably moderate water quality improvement capacity within site
Pollutant sources: local adjacent roads and development, including Northern Lights, may introduce sediments and other pollutants

SUPPLEMENTAL INFORMATION:

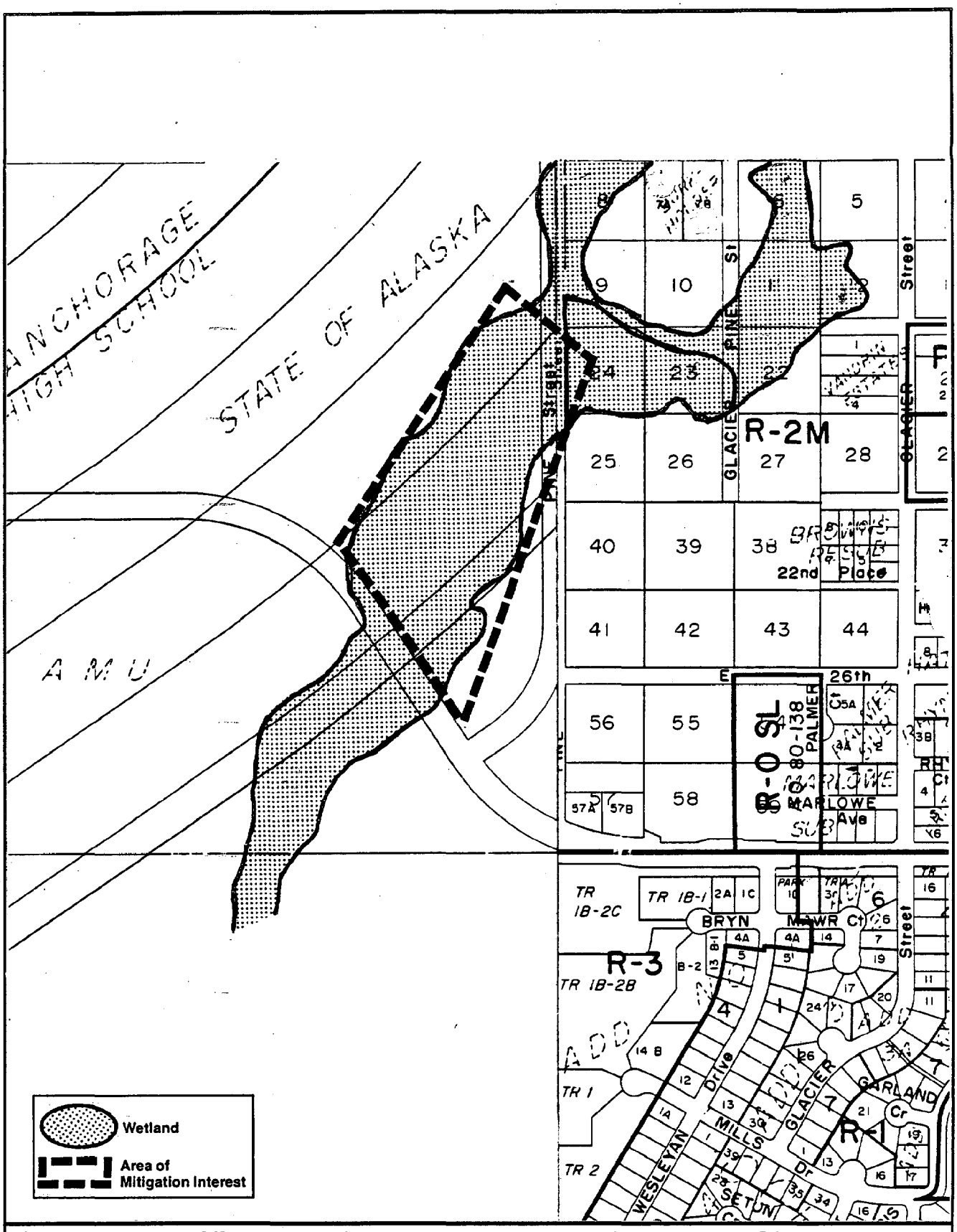
1"=100 feet MOA Map 1536

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement __X__ Acquisition __X__

This wetland is recommended for acquisition. Expansion of open water habitats within wetland could significantly enhance values for waterbirds.

evaluate potential for control structure along Pine Street right-of-way to provide slight increase in water level within wetland by increasing outlet elevation; attention should be given to effect of such action on existing residential area east of Pine Street; identified by MOA for acquisition in USFWS Wetlands Concept Plan



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: A39	Site Name: PINE VALLEY	MOA Wetland No.: 46	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: E1
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: EAGLE RIVER TO EKLUTNA

LOCATION NAME: UPPER FIRE LAKE

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 100

MOA WETLAND MAP SHEET (1982 COVERAGE): E47

MOA AERIAL PHOTO: Date N/A Number N/A

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: unknown

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) _____ Freshwater X

riparian wetlands along inlet stream to Upper Fire Lake; moderately open to forested wetland with few open water areas

SOILS:

the soils in the area are typically high permeability alluvial deposits underlain by bedrock (Brunett and Lee, 1983)

Depth to water table: partly at surface and partly with seasonal high water table 1 ft or less below surface (Brunett and Lee, 1983)
Surface soil erodibility: N/A

EXISTING HABITAT AND VEGETATION:

unknown

FISH AND WILDLIFE USE:

moose winter habitat

HUMAN USE:

wildlife viewing, open space

HYDROLOGY:

Watershed: Fire Creek
Location within watershed: on and adjacent to stream upstream of Upper Fire Lake

Water Balance Components:

Mean annual precipitation: about 19 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986)
Tidal influence: none
Stream channel inflow/outflow: Fire Creek flows through wetland, possibly contributing a net inflow to the wetland
Surface runoff inflow: wetland receives input from moderate drainage area to the southeast on the mountainside immediately adjacent to the site
Groundwater inflow/outflow: probably little net groundwater interchange due to near surface bedrock
Storage capacity: moderate storage; minor effect on creek flows downstream

Water Quality Components:

Wetland quality: probably moderate water quality improvement capacity within site
Pollutant sources: local adjacent roads and development may introduce sediments and other pollutants

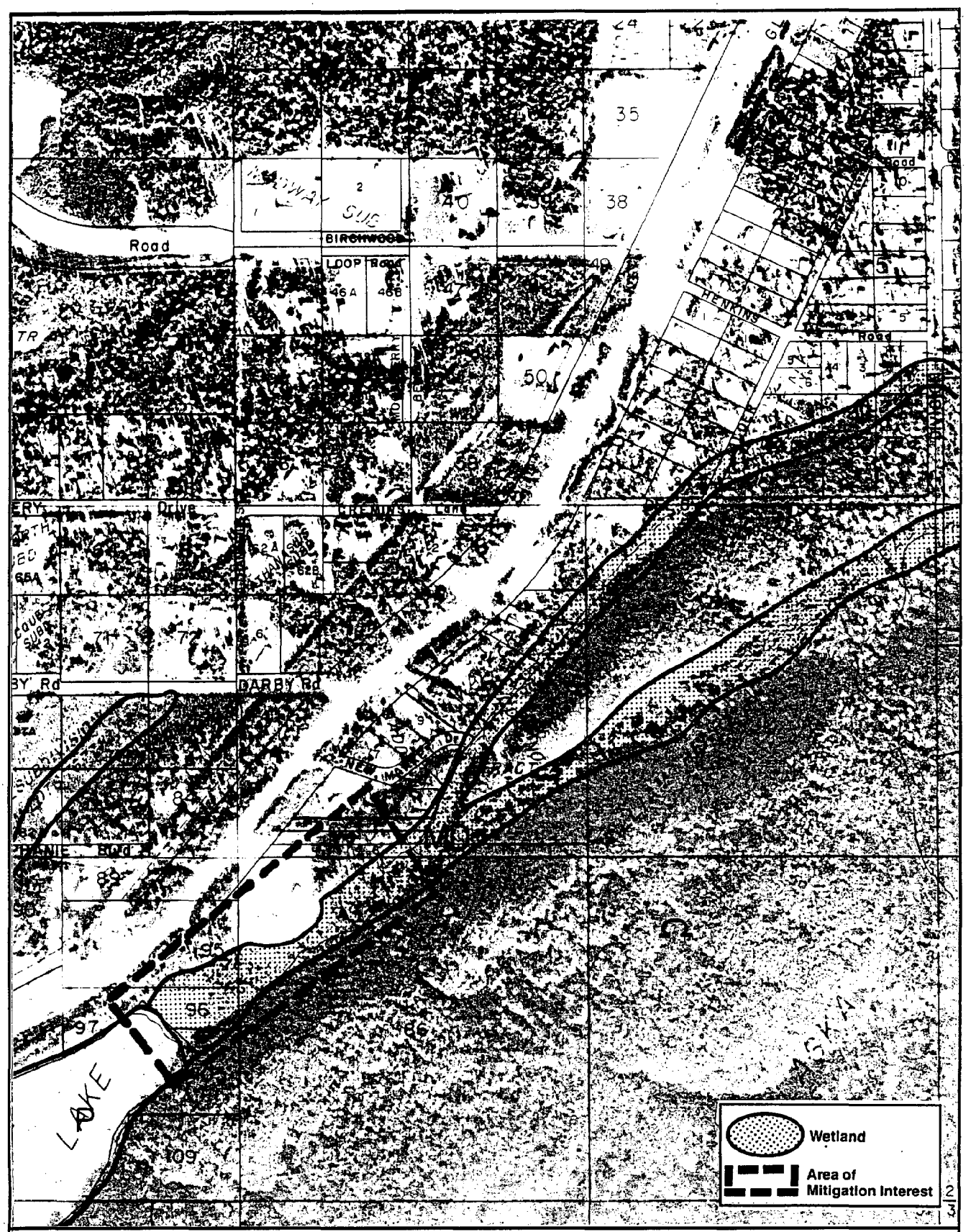
SUPPLEMENTAL INFORMATION:

existing fill in wetland between Fire Creek and the Old Glenn Highway being removed

POTENTIAL MITIGATION ACTIONS:

Restoration ___X___ Enhancement _____ Acquisition _____

reported that fill is being removed from the wetland; however, site specific restoration actions will likely be needed to re-establish wetland function; specific actions to be evaluated follow initial removal of the fill; important to maintain creek setback, stabilize the fill which is not removed to minimize erosion and sedimentation of the stream



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: E1	Site Name: UPPER FIRE LAKE	MOA Wetland No.: 100	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: E2
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: EAGLE RIVER TO EKLUTNA

LOCATION NAME: FIRE CREEK DELTA

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): N/A

MOA WETLAND MAP SHEET (1982 COVERAGE): E31

MOA AERIAL PHOTO: Date N/A Number N/A

WETLAND OWNERSHIP: MOA X Public _____ Private _____

ZONING: unknown

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) X Freshwater _____

esturarine wetlands associated with delta of Fire Creek where it empties into Cook Inlet; area is comprised of homogeneous sedge (Carex) community with interspersed open water areas; majority of areas appears to be on silt plateau above the elevation of active tide zone; hydrologic connection of existing open water areas with Fire Creek is unknown

SOILS:

the soils in the area are typically extremely low permeability tidal silt deposits (Brunett and Lee, 1983)

Depth to water table: saturated at surface (Brunett and Lee, 1983)
Surface soil erodibility: high

EXISTING HABITAT AND VEGETATION:

homogeneous carex over silt plateau above active tide zone; broad delta of Fire Creek in fan shape between upland bluffs

FISH AND WILDLIFE USE:

use by ducks, geese, and shorebirds for feeding and resting; status of nesting waterbird is unknown

HUMAN USE:

wildlife viewing, hunting

HYDROLOGY:

Watershed: Fire Creek
Location within watershed: on and adjacent to stream mouth/estuary

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986)
Tidal influence: probably flooded during most flood tides
Stream channel inflow/outflow: Fire Creek flows through wetland; may flow overbank due to backwater during high tides, possibly contributing a net freshwater inflow to the wetland
Surface runoff inflow: wetland receives input from moderate drainage area to the southeast on the slope immediately adjacent to the site
Groundwater inflow/outflow: probably little net groundwater interchange
Storage capacity: moderate storage; negligable effect on creek flows downstream

Water Quality Components:

Wetland quality: probably minor water quality improvement capacity within site
Pollutant sources: none identified

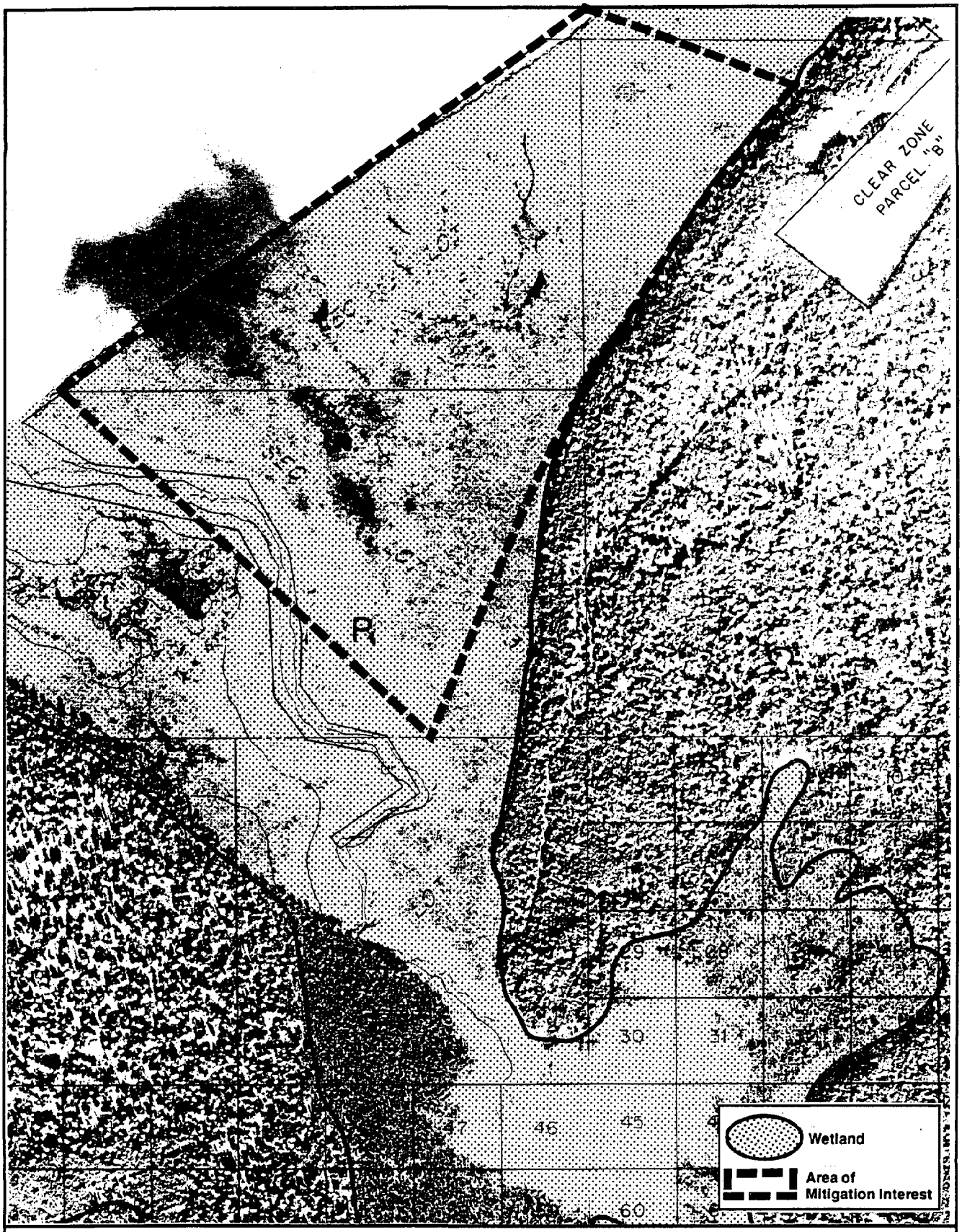
SUPPLEMENTAL INFORMATION:

none

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement ___X___ Acquisition _____

evaluate possible winter work to construct channels from creek to excavated and/or natural depressions in silt plateau; purpose is to create tidally-influenced open water areas connected to Fire Creek; area of interest will likely be at upper limit of unvegetated tide flats to minimize degradation silt deposition; principal area of enhancement interest is north of Fire Creek



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: E2	Site Name: FIRE CREEK DELTA	MOA Wetland No.: N/A	Prepared by: Resource Analysts 7/88	Scale: 1"=500'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: E3
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: EAGLE RIVER TO EKLUTNA

LOCATION NAME: NORTH EKLUTNA FLATS (OLD TOWERS AREA)

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): N/A

MOA WETLAND MAP SHEET (1982 COVERAGE): E6

MOA AERIAL PHOTO: Date N/A Number N/A

WETLAND OWNERSHIP: MOA _____ Public _____ Private X

ZONING: P

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	
Food Chain Support	
Fisheries Habitat	
Wildlife Habitat	X
Active Recreation	X
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) X Freshwater _____

tidally-influenced wetlands north of Glenn Highway in vicinity of old towers; area exhibits evidence of drier environment since low shrub community is developing; possibly related to confinement of freshwater input from the south to defined drainages under ARR and Glenn Highway rather than sheet flow; tidal guts present, but overall influence of estuarine waters is minimal

SOILS:

the soils in the area are typically extremely low permeability tidal silt deposits (Brunett and Lee, 1983);

Depth to water table: saturated at surface (Brunett and Lee, 1983)
Surface soil erodibility: high

EXISTING HABITAT AND VEGETATION:

very limited open water habitats, primarily associated with tidal guts; alder/willow shrub community developing with drier site groundcover plants

FISH AND WILDLIFE USE:

limited waterbird use restricted to open water areas or standing water areas shortly after breakup; possibly some feeding and resting by waterbirds during migration; occasional moose use of the area

HUMAN USE:

wildlife viewing, wild flower collection (wild iris)

HYDROLOGY:

Watershed: unnamed local drainages
Location within watershed: near stream mouth/estuary

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986)
Tidal influence: may be flooded during some flood tides; need to verify elevation with respect to tides
Stream channel inflow/outflow: possible small drainages through or near sites; may flow overbank due to backwater during high tides, possibly contributing a net freshwater inflow to the wetland
Surface runoff inflow: wetland receives input from very small local drainage areas immediately adjacent to the site
Groundwater inflow/outflow: probably little net groundwater interchange
Storage capacity: moderate storage; negligable effect on creek flows downstream

Water Quality Components:

Wetland quality: probably minor water quality improvement capacity within site
Pollutant sources: Glenn Highway may introduce sediments and other pollutants

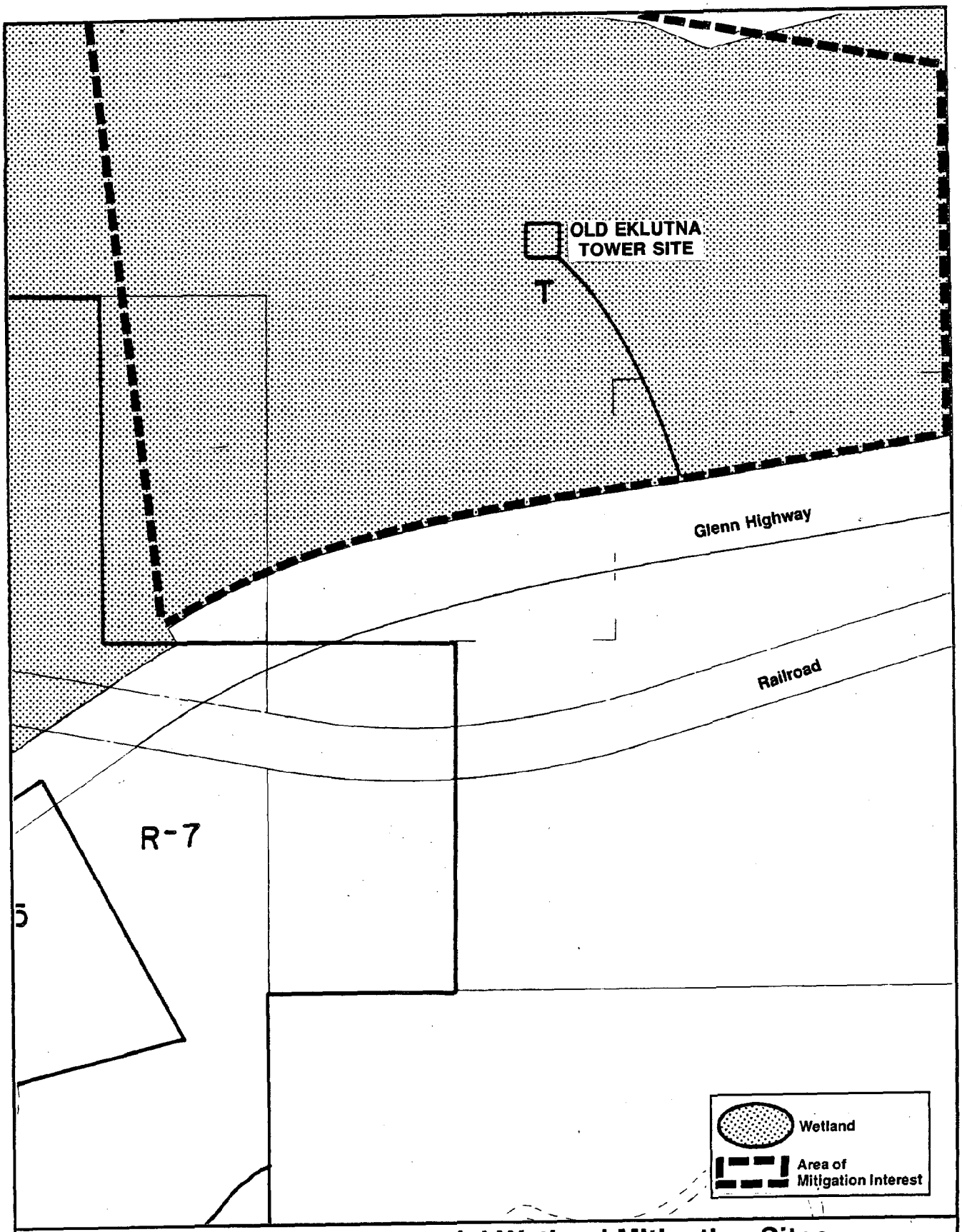
SUPPLEMENTAL INFORMATION:

1"=100 feet MOA Map NE2102

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement ___X___ Acquisition _____

evaluate if water table and/or surface water availability would support open water wetland in excavated depressions; winter construction could be considered, with both isolated and tidally-connected wetlands considered; intent is to create open water habitats which would encourage nesting by waterbirds; since rearing coho salmon are known to utilize nearby wetland areas impounded by the Glenn Highway or ARR, development of salmonid rearing habitat should also be evaluated



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: E3	Site Name: NORTH EKLUTNA FLATS (Old Towers Area)	MOA Wetland No.: N/A	Prepared by: Resource Analysts 7/88	Scale: 1''=100'

MUNICIPALITY OF ANCHORAGE
POTENTIAL WETLAND MITIGATION SITE

WETLAND SITE NO: E4
EVALUATION DATE: 6/30/88

WETLAND GEOGRAPHIC AREA: EAGLE RIVER TO EKLUTNA

LOCATION NAME: WETLAND 131A NORTH OF EKLUTNA

MOA WETLAND PLAN DESIGNATION (SEPT. 1987 REVISION): 131A

MOA WETLAND MAP SHEET (1982 COVERAGE): E3 - E6

MOA AERIAL PHOTO: Date N/A Number N/A

WETLAND OWNERSHIP: MOA _____ Public X Private X

ZONING: P

WETLAND FUNCTIONS:

Groundwater Recharge/Discharge	X
Flood Storage & Desynchronization	X
Shoreline Anchoring/Erosion Control	X
Sediment Trapping	X
Nutrient Retention & Removal	X
Food Chain Support	X
Fisheries Habitat	X
Wildlife Habitat	X
Active Recreation	
Passive Recreation & Heritage Value	X

WETLAND TYPE AND DESCRIPTION:

Coastal (estuarine) X Freshwater X

both estuarine and freshwater wetlands are present upslope of the Glenn Highway and the ARR embankment as a result of impeded or impounded freshwate runoff from the slopes to the south; includes extensive open water areas and shallows with good development of emergent aquatic vegetation; standing dead trees in some portions attest to the occurrence of a "created" or enhanced wetland

SOILS:

the soils in the area are typically extremely low permeability tidal silt deposits (Brunett and Lee, 1983);

Depth to water table: saturated at surface (Brunett and Lee, 1983)
Surface soil erodibility: high

EXISTING HABITAT AND VEGETATION:

open water wetlands upslope of the Glenn Highway and ARR embankment

FISH AND WILDLIFE USE:

rearing habitat for coho salmon; nesting and feeding areas for waterbirds; summer and winter feeding area for small number of moose

HUMAN USE:

wildlife viewing, hiking

HYDROLOGY:

Watershed: unnamed local drainages
Location within watershed: just upstream from stream mouth/estuary

Water Balance Components:

Mean annual precipitation: about 15 inches (Ott Water Engineers, 1979); greatest runoff in late spring and late summer
Evapotranspiration: 10-20 inches (Zenone, 1976); greatest amounts in early summer (Glass, 1986)
Tidal influence: may be flooded during extremely high flood tides; need to verify elevation with respect to tides
Stream channel inflow/outflow: small drainages through or near sites, probably contributing a net freshwater inflow to the wetland
Surface runoff inflow: wetland receives input from moderate drainage areas on mountainside immediately adjacent to the site
Groundwater inflow/outflow: probably minor net groundwater outflow from the wetland
Storage capacity: moderate storage; negligible effect on creek flows downstream

Water Quality Components:

Wetland quality: probably minor water quality improvement capacity within site
Pollutant sources: Glenn Highway and railroad may introduce sediments and other pollutants

SUPPLEMENTAL INFORMATION:

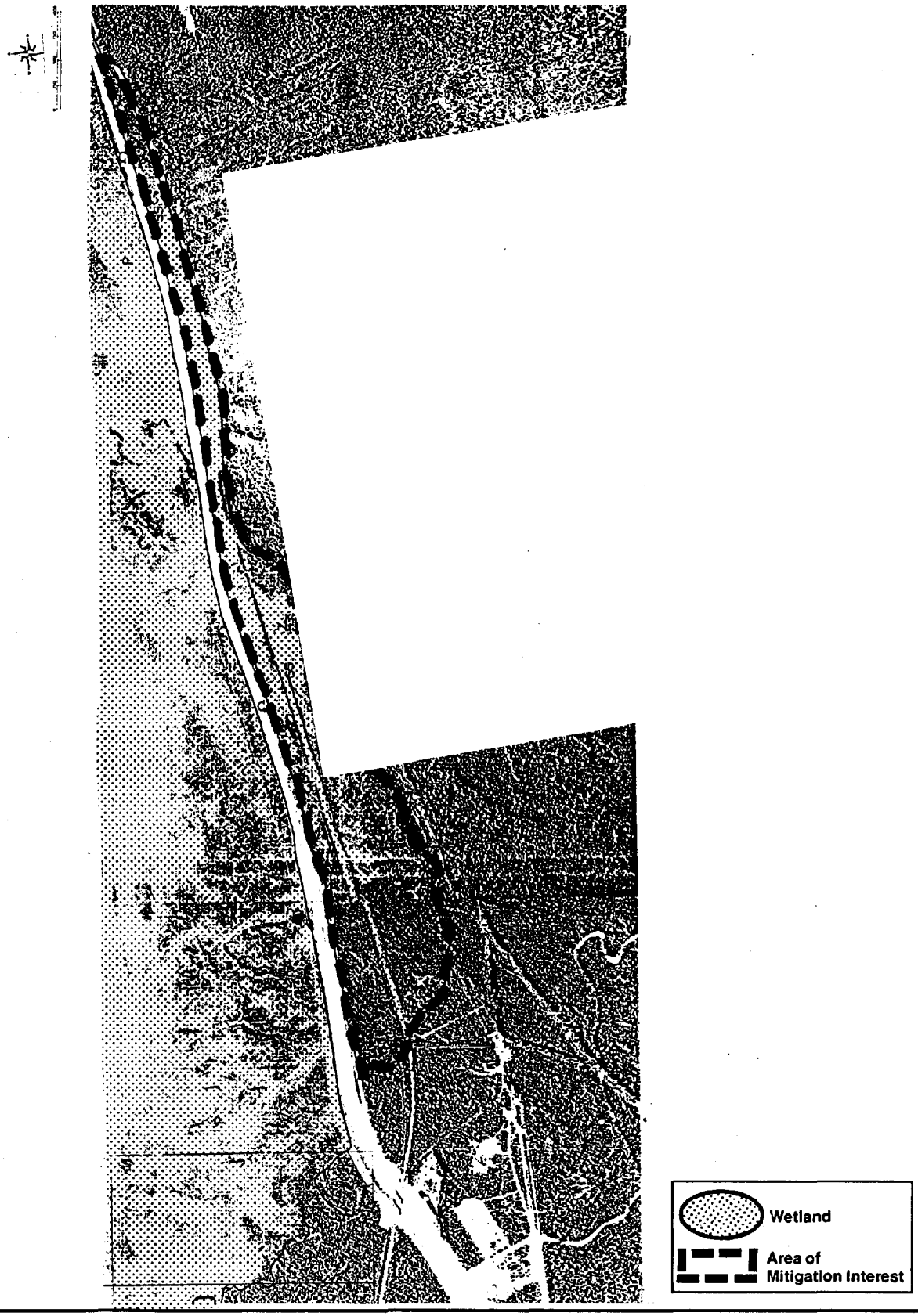
1"=100 feet MOA Maps NE2002, NE2102-2103, NE2105, NE2205

POTENTIAL MITIGATION ACTIONS:

Restoration _____ Enhancement __X__ Acquisition _____

evaluate opportunities for development of additional wetlands through impoundment or water control structures on the upslope side of the ARR and the Glenn Highway; open water would provide

waterbird habitat and potentially rearing for coho salmon (provided there was acceptable ingress/egress for the fry and smolts); since the current wetland areas appear to be functioning well, it would seem that adequate freshwater inflow should not be a problem; potential limitations and problems include multiple landowners and managers, engineering concerns of impounded water and roadway embankments



Identification of Potential Wetland Mitigation Sites Within the Municipality of Anchorage

Site No.: E4	Site Name: WETLAND 131A N. OF EKLUTNA	MOA Wetland No.: 131A	Prepared by: Resource Analysts 7/88	Scale: 1"= 1350'

APPENDIX A

LIST OF INDIVIDUALS AND AGENCIES CONTACTED FOR POTENTIAL WETLAND MITIGATION SITE INFORMATION

Name	Organization	Phone
Phil Brna	ADF&G, Habitat Division	267-2278
Rick Sinnott	ADF&G, Habitat Division	267-2446
Michelle Meier	Anchorage Creeks Cleanup	786-8466
Tom Rothe	ADF&G, Game Division	344-0541
Dan Rosenberg	ADF&G, Game Division	267-2206
Mimi Hogan	U.S. Fish and Wildlife Service	786-3450
Tim Rumfelt	ADEC	563-6529
Lance Powell	Anchorage Creeks Cleanup	263-5245
John Bridges	U.S. Army Corps of Engineers	753-2712
Van Waggoner	Bureau of Land Management	267-1226
Mack Wheeler	Bureau of Land Management	267-1232
Brian Anderson	U.S. Fish and Wildlife Service	271-2888
Rob Lipkin	Environmental Protection Agency	271-5083
Mike Joyce	Public	345-6030
Robin Senner	Audubon Society	345-5891
Roy Dudley	Heritage Land Bank	343-4333
Sally Rue	Public	277-6109
Ann Rothe	National Wildlife Federation	694-9068
Don McKay	ADF&G, Habitat Division	267-2279
Bob Disotell	Public	276-4244
Larry Rundquist	Public	279-7395
Jim Hemming	Dames & Moore	562-3366
Barb Johnson	Ak. Center for the Environment	274-3621

APPENDIX A (continued)

Name	Organization	Phone
Sandra Cosentino	Audubon Society	276-7034
Jan Pohl	Ak. Center for the Environment	274-3621
Maureen McCrae	Anchorage Waterways Council	261-4630
Debbie Clausen	ADF&G, Habitat Division	267-2330
Christopher Estes	Public	267-2412
Jerry Wickstrom	Public	337-3828
Laura Ogar	MOA, Health Department	343-4200
Alyse Huggins	Public	562-2514
Tim Potter	Dowl Engineers	562-2000
Paul Carr	Carr Gottstein Properties	564-2424
Brett Jokela	Montgomery Engineers	561-5829
Gary Stackhouse	U.S. Fish and Wildlife Service	271-2888
Glenn Seaman	ADF&G, Habitat Division	267-2331
Meredith Sandler	Ott Water Engineers	562-2514
Gary Wall	ADF&G, FRED Division	428-1348

APPENDIX B

REFERENCES

Brabets, T.P. 1987. Quantity and quality of urban runoff from the Chester Creek basin Anchorage, Alaska. U.S. Geological Survey Water Resources Investigations 86-4312, 58 pp.

Brunett, J. and M. Lee. 1983. Hydrogeology for land-use planning: the Peters Creek area, Municipality of Anchorage, Alaska. U.S. Geological Survey Water Resources Investigations 82-4120, 6 sheets.

Dearborn L.L. and G.W. Freethey. 1974. Water-table contour map Anchorge area, Alaska. U.S. Geological Survey Open-File Report 1974, 1 sheet.

Emanuel R.P. and D.J. Cowing. 1982. Hydrogeology for land-use planning: the Potter Creek area, Anchorage, Alaska. U.S. Geological Survey Water Resources Investigations Open-File Report 82-86. 4 sheets.

Ford, J. and B.L. Bedford. 1987. The hydrology of Alaskan wetlands, U.S.A.: a review. Arctic and Alpine Research, Vol. 19, No. 3, pp. 209-229.

Freethey, G.W. 1976. Relative permeability of surficial geologic materials, Anchorage and vicinity, Alaska. U.S. Geological Survey Miscellaneous Investigations Series Folio I-787-F, 1 sheet.

Freethey, G.W., J.W. Reeder, and W.W. Barnwell. 1974. Map showing depth to water, Anchorage area, Alaska. U.S. Geological Survey Open-File Report 1974, 1 sheet.

Glass, R.L. 1986a. Hydrologic conditions in Connors Bog area, Anchorage, Alaska. U.S. Geological Survey Water Resources Investigations 86-4044, 23 pp.

Glass, R.L. 1986b. Hydrologic conditions in the Klatt Bog area, Anchorage, Alaska. U.S. Geological Survey Water Resources Investigations 85-4330, 19 pp.

Glass, R.L. and T.P. Brabets. 1988. Summary of water resources data for the Girdwood-Alyeska area, Alaska. U.S. Geological Survey Open-File Report 87-678, 24 pp.

Hogan, M. and G.F. Tande. 1982. Anchorage wetlands study special report on Connors Bogand Klatt Bog. U.S. Fish and Wildlife Service, Special Studies. Anchorage, Ak. 76 pp.

Hogan, M. and G.F. Tande. 1983. Vegetation types and bird use of Anchorage wetlands. U.S. Fish and Wildlife Serve, Special Studies. Anchorage, Ak. 134 pp.

Municipality of Anchorage. 1980. Anchorage coastal resource atlas, Volume 1: the Anchorage Bowl. Planning Department, Physical Planning Division. Anchorage, Ak.

Municipality of Anchorage. 1983. Anchorage wetlands management plan. Prepared by Community Planning Department, Anchorage, Ak.

Municipality of Anchorage. 1987. Draft revised Anchorage wetlands management plan. Prepared by Community Planning Department, Anchorage, Ak.

Nelson, G.L. 1982. Vertical movement of ground water under the Merrill Field landfill, Anchorage, Alaska. U.S. Geological Survey Open-File Report 82-1016, 24 pp.

Ott Water Engineers, Inc. 1979. Water resources atlas. Prepared for USDA Forest Service, Region X, Juneau, Alaska, April, 7 pp + appendices.

Ott Water Engineers, Inc. 1988. Klatt offshore habitat enhancement project. In preparation for the Municipality of Anchorage, Department of Economic Development and Planning.

Still P.J. and J.O. Brunett. 1987. Ground-water levels in Alaska, water year 1984. U.S. Geological Survey Open-File Report 87-230, 308 pp.

U.S. Forest Service. 1979. The mitigation symposium: a national workshop on mitigating losses of fish and wildlife habitats. Rocky Mountain Forest and Range Experiment Station, General Technical Report RM-65. Fort Collins, Co. 684 pp.

Zenone, C. 1976. Geohydrology of the lowland lakes area, Anchorage, Alaska. U.S. Geological Survey Water Resources Investigations 76-22, 2 sheets.