NEWMAN LAKE FLOOD CONTROL ZONE DISTRICT

Spokane County, Washington

POLICY AND PROCEDURES MANUAL

October 2004

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I. INTRODUCTION

A. PURPOSE

The purpose of this document is to provide overall Newman Lake Flood Control Zone District (District) operating policy and day-to-day guidance on District operations.

B. DESCRIPTION OF DISTRICT

The Newman Lake Flood Control District is located in eastern Spokane County and encompasses the watershed of Newman Lake and its outlet channel. This watershed covers an area of 26,500 acres. The watershed of the Lake itself is about 70% this total, or 18,500 acres. The Lake has a surface area of about 1,200 acres. Maps of the District boundaries and watershed area are provided as *Appendix A-1 and A-2.*

Aerial Photo of Newman Lake and Watershed looking north towards Mt. Spokane

The District owns, maintains and operates facilities that control the level and discharge of Newman Lake. The purpose of these facilities is to minimize flooding of areas around the lake and control the water to benefit farmers, lakefront residents, recreationists, etc. These facilities include an outlet control structure, 1.6 miles of dike along the south end of the lake, a 3.8-mile man-made outlet channel, a channel water control structure, and a 40-acre sump. The District also owns, operates and maintains Newman Lake water quality improvement facilities that include a Hypolimnetic aeration system and an Aluminum Sulfate (Alum) injection system. The facility locations are shown on the Newman Lake Watershed Map, *Appendix A-2.*

C. HISTORY OF THE DISTRICT

Prior to creation of the District, the Newman Lake area flood control system was constructed, operated and maintained voluntarily by neighboring farmers beginning in the

1880's. Newman Lake has no natural surface water outlet. To control the lake level and dispose of excess water that hindered their ability to farm areas around the lake, these farmers constructed an outlet ditch. The ditch extended from the south end of the lake almost 4 miles to a natural gravel area northeast of Moab. The waters were allowed to pond in this area, and seep into the ground. Initial Right-of-way for the ditch and rights to flood in the area of the sump were obtained in 1886 and 1887, respectively.

This group of farmers more formally became the Trustees of the Newman Lake Drainage Ditch in 1902. Beginning in 1903, the Spokane Canal Co., the predecessor of the Otis Orchards Irrigation District, entered into a 99-year lease of the ditch from the Trustees and took over maintenance of the facilities. The Otis Orchards Irrigation District obtained additional easements/right-of-way along the channel over the intervening years. They also obtained property just south of the current outlet structure for construction of an outlet structure in 1920, and an easement for construction/maintenance of a dike at the south end of the lake in 1936.

Remnants of Old Outlet Structure

However, after construction of the Spokane Valley Water Project, the Otis Orchards Irrigation District no longer had a need for water from Newman Lake. In fact, the Otis Orchards Irrigation District wished to be relieved of the necessity of continuing to maintain the ditch so that they could dissolve their District. Newman Lake area residents dependent on operation of this water control system had to find an organization to take responsibility for operation of the system as well as sponsor funding requests for improvements.

The Newman Lake Flood Control Zone District was formed in 1968 when Newman Lake area property owners asked Spokane County for assistance in managing the lake level and flooding problems around Newman Lake. The existing flood and water control facilities at Newman Lake had deteriorated and were not functioning properly. They needed an organization to be responsible for the improvement of the control structures and outlet channel. At the time, this type of District was the least costly and easiest to form and best met the needs of the District. In April 1967, a petition signed by over 25% of area electors was filed with the Spokane County Auditor for the creation of a flood control zone district. The Board held public hearings, and on October 29, 1968, the Board signed a resolution forming the Newman Lake Flood Control Zone District. A copy of this resolution is in *Appendix B-1*.

In 1974, the Soil Conservation Service (SCS) completed preparation of a Watershed Work Plan for Newman Lake. The plan provided for a new outlet structure to be constructed north of the existing structure where rock could provide a solid foundation. The plan also called for improvements to the floodwater barrier, outlet channel and sump to meet current design standards and handle a 100-yr. flood event. All of the funds for construction of these facilities were to be provided under the Federal PL 566 program. However, local funds were needed for

securing the right-of-ways necessary for these improvements, and operating and maintaining these improvements after construction.

The plan was implemented and facilities were constructed between 1977 and 1983, at a total construction cost of about $900,000. Costs of obtaining right-of-way for these facilities totaled about $130,000. The District began collecting benefit assessments for the operation and maintenance of these structures, and to pay off bonds used to fund right-of-way acquisition in 1981.

Newman Lake area citizens began to raise water quality concerns in the late 1970's and early 1980's. Serious algae blooms were having an impact on the beauty and recreational use of the lake. To allow the District to assist in efforts to study and alleviate water quality problems, citizens initiated a campaign to revise state law to allow flood control zone districts to fund water quality improvements. This was accomplished in 1983.

In 1985, the District received a grant from the Washington State Department of Ecology (DOE) to study the Lake's water quality problems. This began Phase I of the Lake Restoration Program. This study identified the problem as overloading of nutrients, most particularly phosphorus from watershed runoff and recycling of in-lake sediments. This was feeding excessive algae growth and creating a high biological oxygen demand that was causing extremely low oxygen levels in the lower level of the lake, damaging fish habitat. Proposed solutions included: an alum treatment to bind up phosphorus in the water column and cap sediments to reduce nutrient recycling; a hypolimnetic aeration system to increase oxygen in lower lake levels and thereby reduce nutrient recycling and improve fish habitat; and reduce sediment/nutrient loading input from the watershed with a watershed management plan, public education, and a septic system survey.

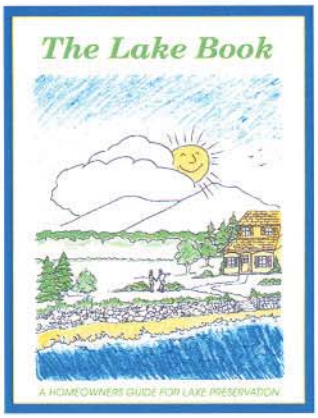
Alum Treatment in 1989

These recommendations were implemented as Phase II of the Lake restoration with grant funding from DOE in 1989. The goal of this grant was reduction of nutrient levels in the lake now and into the future. The District provided 25% of the matching funds with a lake restoration benefit assessment that it began collecting in 1989. Total cost of the Phase II restoration program was about one million dollars.

Aerator Construction 1992 – Installation of Speece Cone

The surface alum treatment (about 520 dry tons alum) was done in 1989 at total cost of $265,000. The Hypolimnetic Aeration system, constructed at a cost of $539,000, began operation in 1992. In addition, the Spokane Regional Health District

conducted a survey of lake front septic systems and public involvement was encouraged through the establishment of the Newman Lake Watershed Committee (NLWSC), a watershed management plan was prepared, a "Lake Book" was published to provide information to homeowners, and a water quality monitoring program was initiated.



The implementation of Phase II has significantly improved Lake water quality, with improved dissolved oxygen levels, and reduced algae blooms. In 1997, with the effects of the initial surface alum treatment decreasing, the District continued Lake water quality improvement efforts with construction of a Micro-Floc alum injection system, using the existing aeration system as a distribution system. Total cost, funded solely from District lake restoration benefit assessments, was about $57,000. Prior to this construction, the District prepared the Comprehensive Plan of Development for Stormwater Control in the Newman Lake Watershed. This report provides the guidance for our current watershed management and water quality improvement activities.

D. MISSION AND GOALS

Citizen concerns and interests have driven the mission of the District since its formation in1968. It now covers a broad range of watershed issues from flood control, to water quality improvement, to Watershed management.

Mission Statement:

- To maintain and operate Newman Lake flood control facilities and manage the lake level to serve the needs of homeowners, farmers, recreationists and others.
- To provide leadership and a focus for community efforts to improve the water quality of Newman Lake.
- To work with landowners and public and private agencies to minimize impact of watershed activities on lake water quality.
- To monitor Lake water quality and operate and maintain the lake aeration and alum injection systems to maximize their benefit.
- To control invasive species while minimizing disruption to use of the Lake by homeowners and recreational users

To that end, the District has the following continuing objectives:

- Maintain and operate the flood control facilities to manage the lake level
- Maintain and operate the aeration and alum injection systems, while continuing to monitor water quality for effectiveness.
- Implement the Comprehensive Plan of Development for Stormwater Control in the Newman Lake Watershed with the assistance of the Newman Lake Watershed

Committee (NLWSC) and the Newman Lake Property Owners Association (NLPOA).

- Continue to work with the citizens of the watershed committee and look at ways to improve Newman Lake watershed management and water quality.
- Control Eurasian water milfoil infestation with periodic surveys and treatments as required.
- Continue to be a resource for landowners with questions and concerns about Newman Lake levels and water quality.
- Meet with the Advisory Board bimonthly to discuss district issues and management.

E. ORGANIZATION

The District was formed under RCW 86.15, Flood Control Zone Districts (See *Appendix C-1* for a complete copy). The Spokane County Board of County Commissioners (BCC) are ex officio, by virtue of their office, supervisors of the District. Also per the RCW 86.15, the Spokane County Engineer administers the District. The District has a 5-member (plus 3 alternate members) Advisory Board. Members are appointed by the BCC and serve without pay.

II. ADMINISTRATIVE POLICY AND PROCEDURES

A. BUDGET

1. ANNUAL BUDGET PROCESS

As required by RCW 86.15.140, the budget is prepared annually along with the County budgets. Budget preparation must begin early the preceding year, usually in the spring. The administrative staff first proposes a draft to the District Advisory Board for their review and comment. After this review, the draft budget is presented to District residents at the annual general meeting held in the summer. Copies should also be mailed to all District property owners or published in newsletter (or at least notice of availability is published in the newsletter). This District general meeting must be scheduled early enough so that meeting comments can be incorporated into the draft budget proposal that is prepared for BCC review in late July or August.

After BCC review, the proposed District budget is reviewed at a public hearing usually scheduled for early December. Notice of this hearing and availability of the proposed budget shall be published in the local newspaper. After the public hearing is held, and if no changes are required the District budget resolution is usually signed by the BCC the next day. This then becomes the basis of the next year's assessment roll.

2. FORMAT

Per RCW 86.15.140, the budget shall be divided into the following items: (1) overhead and administration, (2) maintenance and operation, and (3) construction and improvements, and (4) bond retirement and interest. The Flood Control and Lake Restoration assessments are collected by the County Treasurer and put into one general account per state requirements. To insure that funds are being collected and spent fairly (meaning that property owners are paying for operation of the improvements that benefit them) expenses must be tracked as to whether they are for Flood Control or Lake Restoration (Water Quality) improvements. This includes tracking of year-to-year carry-over funds or reserve balances. In addition, it shall be the policy of the District to plan and track expenses not just per state/county accounting requirements, but also in a simpler manner to enable clear understanding of how District funds are spent by the Advisory Board and District property owners.

3. RECORD KEEPING AND EXPENSE TRACKING PROCEDURES

Invoices for all District expenses shall be verified by the Newman Lake Engineer and signed as approved by the Environmental Program Administrator prior to processing for payment. Copies of these invoices along with payment documents signed by the County Engineer shall be filed in the Spokane County Engineers office. These invoices shall be available for review if requested by District residents. Also all expenses should be tracked by

input into a separate database by date, project, budget object #, flood control/lake restoration cost split, etc. This will enable budget summary information to be tracked through the year in a more accurate way than reliance on county budget systems. See sample spreadsheets provided as *Appendix D-1*.

4. RESERVE FUNDS

The District shall retain reserve funds (end of year carry over) for major or emergency repairs and maintenance. The amount of these funds should usually be about $40,000 for flood control facilities and about $70,000 for water quality improvement facilities. If amounts differ significantly from these balances, reducing or increasing the following year's fund may adjust them. Restoration of these reserve balances should be made in a reasonable time period, usually within 3-5 years.

B. ASSESSMENTS

1. DESCRIPTION

The District is funded by benefit assessments, one of five funding options provided for flood control zone districts under RCW 86.15.160 (See *Appendix C-1*). RCW 86.15.160(2) authorizes "an assessment upon property, including state property, specially benefited by flood control improvements for storm water control improvements imposed under chapter 86.09 RCW". See *Appendix C-2* for a copy of RCW 86.09. This method of funding was chosen, at the time of initial fund collection, as the fairest to District residents. That is, only those who benefit from improvements provided by the District will contribute to their construction operation and maintenance. As required under RCW 86.09, a board of appraisers was formed and all lands within the district were classed according to their benefits from the planned improvements. The Board of County Commissioners also specifically implemented the RCW 86.09.409 for the alternate method of determining benefit ratios for both Flood Control and Lake Restoration assessments. This means that the value of property, not the area, is used as the basis of assessment calculations.

2. BENEFIT CLASSIFICATIONS

Benefit appraisers prepared the Base Assessment Map for planned Flood Control improvements in 1978. They grouped land into the following 5 classes in descending order of flood control benefits received. For actual boundaries, see original Base Assessment section maps on file in the Newman Lake Engineers office. An overview map is provided in *Appendix A-4*:

CLASS	BENEFIT RATIO	GENERAL DESCRIPTION
1	100%	Lower agricultural land (south)

2	50%	Upper agricultural land (north)
3	50%	Non-agricultural land around the Lake which will receive prime benefits from the project.
4	10%	Non-agricultural land around the Lake, which will receive secondary benefits from the project.
5	0%	All other land within the district which will receive no benefits from the project.

In 1988, after the BCC signed a resolution to proceed with the Phase II Lake Restoration project, a board of appraisers was again appointed by the board to determine benefit classifications for this project. A Base Assessment Map "B" was then prepared with the classes and benefit ratios listed below. Again for actual boundaries of these classes, see Base Assessment Map "B" section maps on file in the Newman Lake Engineers office. An overview map is provided as *Appendix A-4*:

CLASS	BENEFIT RATIO	GENERAL DESCRIPTION
1	100%	Non-agricultural, lakefront.
2	60%	Secondary lots without lakefront access.
3	30%	Tertiary lots (parcels smaller than 10 acres on the main road circling the lake that are within ½ mile of the lake).
4	10%	All other lands, including farm lands that connect directly to the Lake.
5	0%	All other land within the District.

3. ANNUAL ROLL CERTIFICATION PROCESS

a. Roll Preparation: Annually, after the budget for the following year is determined, usually in December, a District Assessment Roll is prepared which tabulates the amount each parcel within the District will be charged the following year. The Roll is prepared based on requirements of RCW 86.09. All parcels are listed by parcel #, owner, portion of area

of parcel located within each Flood Control and Lake Restoration benefit classification, total property valuation from the general tax rolls, adjusted property valuation for flood control and lake restoration based on classification percentages, the amount of each assessment, and total District assessment for each parcel. The owner listed is the next year's owner as designated by the Assessor's office records.

b. Assessment Calculations: Calculations of assessment amounts are done separately for Flood Control and Lake Restoration fund categories. First, an adjusted property value for each funding category and for each parcel is calculated. This is based on the proportion of parcel area in a class, and the benefit ratio of that class. For example, a parcel with 50% of its area in Flood Class 1(100% benefit ratio) and 50% in Class 5 (0% benefit ratio) will have an adjusted Flood value of 50% of its general tax valuation [(50% x valuation x 100%) + (50% x valuation x 0%)]. Second, the total District funding requirement for Flood or Restoration for that year is multiplied by the ratio of the parcels adjusted valuation and the total of the adjusted valuation of all parcels in the District. This product is the parcel's assessment for either fund category. The Flood Control assessment and the Lake Restoration assessment are totaled for each parcel to come up with the total District assessment for the parcel. See graphic explanation provided in *Appendix D-2.*

c. Board of Equalization: When the District Roll is prepared notice shall be given (by publishing in the newspaper) of the date for a Board of Equalization hearing. The hearing shall be held within 20-30 days of date from first publication of the notice. The Board of County Commissioners shall serve as the Board of Equalization. The Roll shall be available for all to review. If assessments will be increasing significantly, it shall also be the policy of the District to send individual written notice to all property owners of their actual or average estimated increase and hearing date by mail. The Board of Equalization can hear and make adjustments only on those issues related to the fairness of individual assessments, not the general tax valuation, or to the total District budget or funding requirements. The public hearing on the District budget, held usually in the beginning of December along with the County budget hearings, is the forum to address budget issues (see Section II.A above). An appeal to the Assessor's office when assessment change notices are sent out is the proper forum to address the fairness of appraisals. The final roll, with any changes made by the Board at the equalization hearing, shall be completed and forwarded to the Treasurer by the 15th of January as required by RCW 86.09.484. Additionally, any changes made by the Board of Equalization shall be noted on the official Base Assessment maps and in the roll database.

d. Accuracy/Corrections: The roll shall be manually reviewed for accuracy every 3 years. Errors and omissions can be corrected up to three years back. It is the policy of the District that errors, which are the District's fault, will not require reimbursement by the property owner during this period. However, refunds will be made to those who overpaid due to District errors for the current and previous two years. Errors found shall be corrected and explained in remarks for future reference in the Roll Database.

4. SEGREGATIONS/CHANGES

Segregations, aggregations, or valuation changes made during the year (after completion of the roll) shall be processed at the request of the Assessor's or Treasurer's office. The results will be forwarded by memo to the Treasurer's office, and copy kept on file for future reference. At the Treasurer's Office request, District staff will need to calculate the amount of the new assessment for a parcel for the Treasurer's office. If the property is being segregated, the total amount charged to the parents [original parcel(s)] is split to its children (the new parcels created by the change) based on the distribution of tax valuation to the children. If property is being aggregated, the parents' assessment is totaled for the children, again based on the distribution of tax valuation. The change in proportion of the area of benefit between the parent and child also needs to be analyzed. That is, if a child parcel is no longer in a class 1 through 4 benefit area then that parcel will not be assessed a charge and the total would be distributed proportionally to the other parcels. In any case, the total new charge assessed the children should be the same as the total of the parents. At the end of the year, prior to the preparation of the roll, the % area of each child parcel within each benefit class shall be calculated and the database updated so next years charges will be calculated accurately. See *Appendix D-3* for sample calculations. Mid-year parcel valuation changes will require a recalculation of charges based on the new valuation. The new total charge will be the product of the old assessment times the ratio of the new valuation to the old valuation.

5. DISTRICT MAILING LIST

The District mailing list shall be based on the owner addresses listed by the Assessor's office and include all parcels within District boundaries. Informational mailings (newsletters, meeting notices, etc.) should also be sent to residents south of the District in the Moab area and other boundary areas that are affected by District activities, as well as other interested persons or agencies. Corrections noted by returned mail, NLPOA/Watershed committee address updates, citizen calls, etc. should be recorded in the "preferred address" database and new addresses/owner changes checked upon running of a new address list. Property owners should also be urged to keep their addresses up to date with the Assessor's and Treasurer's offices. Many times the tax billing address is updated and the owner and owner address data can be years out of date. Those that have tax bills sent to a mortgage company may not always keep their address up to date. Also, the Post Office will forward first class mail but bulk mailings may not be returned or forwarded.

C. ADVISORY BOARD

1. MEMBERS

The eight-member District Advisory Board is made up of 5 voting members and 3 alternates. The three alternate positions (non-voting, as maximum of 5 members is allowed by RCW 86.15.070) were added by the Board of County Commissioners in 1996 to broaden

Advisory Board viewpoint base and increase the opportunity for residents to become involved in the operation of the District.

1. TERM[1]

The Advisory Board positions should normally have a term of 4 years. This will stagger position openings. In the case of appointment to an un-expired position, the term may be shorter. No person shall be appointed to an Advisory Board position if fulfilling the appointment will extend the person's total appointment on the Advisory Board to more than eight (8) consecutive years. The Board of County Commissioners reserves the right by majority vote on a case by case basis to adjust this limitation as deemed appropriate.

3. SELECTION POLICY[1, 2]

It is the policy of the District to keep as diverse perspectives and opinions on Advisory Board as possible. Accordingly, one member shall be a representative of a Newman Lake community group which is formally established such as homeowners association (chapter 64.38 RCW) or a not for profit corporation (chapter 24.03 RCW). The next three should represent as much as possible, agricultural/forestry, lakefront homeowner, and seasonal resident interests, with the final position listed as "open" to allow for flexibility based on applications that are submitted. Alternate positions should represent similar diversity. The appointment of more than one Advisory Board member from the same family will be discouraged. For the purpose of this provision, the terminology family will include a member's current spouse, brother, sister, children, parents or in-laws. The District shall encourage and balance participation of new members, while retaining knowledge resource of long time members. Priority in the selection process should be given to assessment paying members. A majority of the voting members of the Advisory Board shall be District property owners or residents paying assessments.

4. SELECTION PROCESS

Upon vacancy of a position, by either the end of a term or resignation, the District staff shall encourage interested district residents to apply for the vacant position via announcement at general meetings, newsletter/informational mailings, and/or press release. Applicants should be requested to complete the application form provided in *Appendix D-8*. Applications shall be reviewed by District staff, and the proposed selection presented to the Advisory Board for their review. With Advisory Board recommendation, the staff proposal shall be forwarded to the Board of County Commissioners for their approval and signing of a resolution.

5. MEETINGS

Advisory Board meetings shall be held about 4 times per year or as required by District activities. Staff shall keep the Advisory Board informed on District activities, request Advisory Board opinions/viewpoint on District policy decisions, budget issues, project priorities, etc. Advisory Board members shall provide community perspective and input to District activities and policy.

It is the policy of the District that all views expressed at the Advisory Board meetings, whether by board members, staff or interested participants, shall be listened to and respected by those in attendance, whether or not they agree with them. An important function of

1 – Updated in April and May 2009 by BOCC Resolution No. 09-0344 and 09-0445.

2 – Updated in February 2016 by BOCC Resolution No. 16-0156.

the Advisory Board meetings is to encourage participation and get views from all sides of an issue. Lessening the importance of other's views for whatever reason discourages participation and involvement that is critical to operating the District.

D. DISTRICT STAFF

Per RCW 86.15.060, administration of the affairs of the District shall be by the County Engineer. The County Engineer may hire or designate employees as required by the District operation and authorized by the District budget and the Board. District staff members are therefore Spokane County employees and are hired and work per Spokane County policy and regulations.

The following are District Staff specifically assigned to District management, operations and administration. Complete Job Descriptions of the asterisked (*) positions, those who spend all or most of their time on District Activities are provided as *Appendix D-7*:

Environmental Program Administrator: Section Supervisor for the Newman Lake Engineer. Performs supervision of personnel and reviews work of the Newman Lake Engineer.

Newman Lake Engineer*: Technical and administrative oversight of District activities including operation of flood control facilities, aerator and alum systems, design and management of district maintenance projects, answering landowner concerns with regard to lake water quality and flood control activities, and working with the Advisory Board on district issues and the Newman Lake Watershed Committee on watershed and water quality improvement issues and projects.

Environmental Programs Technician: Assists Newman Lake engineer with technical and administrative tasks.

Flood Control Technician*: Opens and closes the water control gates, maintains records of lake levels, visually inspects flood control facilities and performs routine cleaning and maintenance.

Aerator Technician*: Inspects equipment in aerator building daily, turns compressors on and off, and requests repairs/service as needed, operates and does minor maintenance on alum injection system.

Because of safety and liability concerns, only Spokane County employees shall perform the duties of the Flood Control and Aerator Technicians even on a temporary or one-time basis.

E. PUBLIC INFORMATION AND EDUCATION

1. ANNUAL MEETINGS

Public meetings, to which all District residents are invited, shall be held annually. Mid-summer has proven to be the best time as summer residents are in the area and it is still prior to the time of next year's budget submittal to the Commissioners. Meeting notices should be put in the newsletter, fliers placed at local businesses, and/or signboards set out to encourage maximum attendance.

2. NEWSLETTERS

Regular newsletters, published about two times annually, are mailed to all those on the District Mailing List. These newsletters are usually published cooperatively with the NLWSC and the NLPOA and will also include information on other community activities. The primary purpose of the newsletter should be to educate and inform Newman Lake area residents of Newman Lake and Watershed water quality issues and improvement efforts. This newsletter will also be the vehicle to keep resident and property owners informed on other district policies and activities.

3. INFORMATION REQUESTS

It shall be the policy of the District to respond as completely and promptly as possible to District residents requests for information, especially with regard to District activities and issues. As much as possible, all activities and records of the District shall be available to the Public. If the residents and taxpayers of the District are informed and educated on District operations, their participation in District decision making and activities will be much more valuable to the community.

F. REAL ESTATE

The District owns real estate and has easements to allow construction, operation and maintenance of its Flood Control facilities and the Aeration and Alum Injection systems. A list of parcels owned by the District is provided in *Appendix D-4*. Real estate summary maps and copies of deeds and easements should be kept up to date and on file at the office of the Newman Lake Engineer.

The District policy shall be to discourage use of or encroachment on District property, right-of-ways or easements by property owners, unless allowed by agreement. If use interferes with District operations, the District shall send a letter to the violating property owner and request they discontinue use and remove any structures in a reasonable time frame. Lack of cooperation from the property owner shall be followed up by legal action.

III. FLOOD CONTROL FACILITIES AND OPERATIONS

A. DESCRIPTION

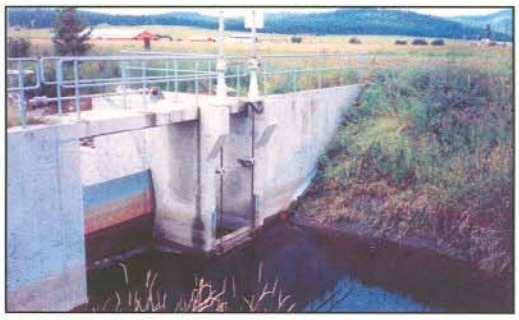
The Newman Lake water level and flood control structures were all constructed or improved by the SCS under the Watershed Work Plan of 1974. (A copy of this plan is on file in the District office). See paragraph IV.E.2 for a summary of this plan. This flood control system, operated by the District, includes the following facilities (see *Appendix A-2* for a map of facility locations and *Appendix A-5* for typical plans and sections of outlet structure, lake dike, channel and channel water control structure; full size as-built drawings of these structures are on file in the District office for further details):

1. Lake Outlet Regulating Structure: This has a top of weir elevation of 2126.0', and a notch elevation of 2125.6'. The structure has two slide gates each with maximum opening of 3' high by 4' wide. If the lake elevation were at the top of the weir, the flow through these gates when both fully open would be 175 cfs (or 87.5 cfs through each gate).

2. Flood Water Barrier: The Flood water barrier extends 1.6 miles along the south shore of the lake from the outlet structure on the north east to Honeymoon bay at the south west end. The Barrier is made of native peat soils except near outlet structure. The channel behind the barrier was the source of the dike material. Design top elevation of the floodwater barrier is 2129.0'. This allows 2 foot of freeboard over 100-yr lake elevation of 2127.0'

3. The Outlet Channel: The Outlet Channel extends from the Outlet gate south to the Sump a distance of approximately 3.8 miles. Design capacity is 175 cfs, however, flows have exceeded at least twice that amount in 1997 without significant damage. Flooding onto the adjacent fields does occur upstream of the channel water control structure. These areas are FEMA designated 100-year floodplains.

Outlet Channel, Looking North (Upstream) from Moffat Road – September 2000

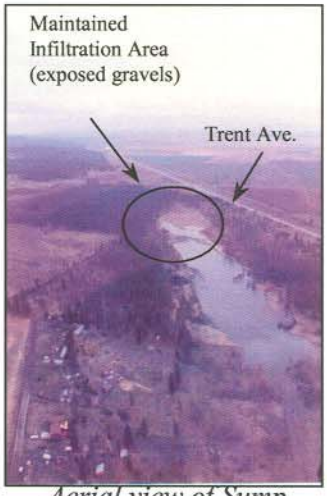


View of Upstream side of Water Control Structure- July 1993

4. The Channel Water Control Structure: The Channel water control structure (also called Ost or radial gate) has a large radial gate (7' high by 10' wide) and a smaller weir gate (3' high x 5' wide) used to control upper channel water levels. With the radial gate closed (down) as it usually is during the summer, the upper channel elevation can be controlled between 2119.8 and 2122.8 feet.

5. The Sump (or Sink): This is the infiltration area for the water delivered by the outlet channel. It is located just north of Trent Rd. When "full", the area covered by water is approximately 40 acres, of which only approx. 7 acres are maintained to keep highly permeable gravel exposed and clean. The sink is designed to overflow over the south dike at an elevation of 2084.7'. Estimated maximum infiltration capacity of the sump when clean is approx. 425 cfs. This capacity is reduced during longer duration flows due to silt build up, to approximately 250 cfs.

Looking northwest across sump from access road- April 2000



Aerial view of Sump looking East - April 1985

These facilities were designed by SCS to handle a 100-year (1%) snowmelt event over a 10-day period. The SCS TR-20 computer model was used based on local climate data and watershed/sump performance data from the 1968-69 winter, an estimated 10-year event. However, The 1997 spring runoff was at 100-year flow levels for over 2 months. During this extended period, the lake and sink storage could no longer provide a buffer. Sink capacity was

Aerial Photo of Sump Flooding at Intersection of Trent and Starr Roads – April 1997

exceeded for a period of almost 2 months. The sink overflowed at the southwest sump dike, down across farm fields, down and across Starr Rd. The floodwater flowed into the commercial area along Starr and Trent roads, through the mobile home park off Trent and into farm fields further west along Trent.

B. OPERATING POLICY & GOALS

As stated earlier, one of the primary goals of the District is to maintain and operate Newman Lake flood control facilities and manage the lake level to serve the needs of homeowners, farmers, recreationists and others. The policy of the District, as required by the Watershed work plan and SCS Operation and Maintenance agreements, can be summarized as follows:

1. The District should maintain a normal lake elevation of 2125.6'. It should as much as possible minimize flooding above this elevation and excessively low summer lake elevation.
2. The District shall, when possible, provide drainage and sub irrigation for farmlands below the lake. Landowners are responsible for coordinating their farming schedules with the District's operations. The District cannot guarantee that flooding will not occur. At times water will need to be discharged from the lake. That may result in flooding, lack of adequate drainage or excessive sub-irrigation of soils in the lands adjacent to the lake, the floodwater barrier, the outlet channel and sump.
3. The District shall operate in compliance with all applicable Federal, State and local laws.
4. The District shall operate in a manner that will protect the environment.
5. The District shall operate the system in a manner as to avoid threat or hazards to public health and safety.
6. The District shall take measures to prevent unauthorized operation of the system.

C. SCS OPERATIONS & MAINTENANCE AGREEMENT

With the acceptance of funds for construction of the flood control facilities from the US Soil Conservation Service (SCS), now the National Resource Conservation Service (NRCS), the District agreed to operate and maintain these facilities. There are two Agreements covering the Newman Lake flood control facilities: the first one signed in 1978 and amended in 1979 covers the Outlet structure and channel to station 122 +00, and the flood water barrier. The second Agreement covering operation and maintenance of the balance of the channel, the channel water control structure and the sump was signed in 1981. This second Agreement and its associated Operation and Maintenance Plan were revised in 1994 to clarify the priority of operations. It adds that the required release of large volumes of water from the lake to prevent flooding may make it difficult to meet farmers' drainage/irrigation requirements. A copy of both Agreements is provided as *Appendix B-2*.

In summary, these Operations and Maintenance agreements require the following:

1) The District is responsible for and shall promptly perform at their own cost all required maintenance, repair, or replacement work of the flood control facilities.
2) The District will perform annual inspections and forward reports to NRCS.
3) The District shall obtain prior service approval of plans and specifications of any alteration of improvement that effects the performance of the system
4) The District will operate and maintain in accordance with the attached Operation and Maintenance Plan.

Also, as a part of this second revised agreement, in 1994, a notice was recorded for each parcel adjacent to the outlet channel. This notice stated that the landowners are responsible for coordinating their farming schedules with the District's operation and the District cannot guarantee that large volumes of water will not need to be discharged that may result in flooding, lack of adequate drainage or excessive sub irrigation of soils. A copy of this notice is provided in *Appendix B-3*.

D. INSPECTIONS

All Flood Control Facilities shall be inspected annually and additionally after a major flood event in compliance with the SCS (NRCS) Operations and Maintenance Agreement. Copies of all inspection and follow-up reports shall be forwarded to the NRCS, District Conservationist. Inspections shall be accomplished by at least two District personnel (the Newman Lake Engineer plus another Spokane County Engineering Dept. Staff member). Assistance may be

Dike Inspection – April 2000

requested from NRCS in performing the inspections. Reports shall include (1) findings of the inspection, (2) recommendations for corrective action, and (3) a schedule for corrective work. A follow-up report will be prepared when corrective work is completed. A form for these inspections is provided as *Appendix E-5*.

E. OPERATING PROCEDURES

1. LAKE LEVEL

Per the Watershed work plan and agreements with NRCS, the water level of Newman Lake should normally be stabilized at an elevation of 2125.6'. This has been set as the goal elevation for Memorial Day. The winter goal elevation will normally be 2123.9' to allow for spring snowmelt runoff. The summer elevation curve goal is based on recent Advisory Board meeting discussions on issues including increased beach erosion with heavy boat traffic, boat access difficulties, May and June flooding during heavy rains, water quality impact. It also included consideration of gradual draw down to avoid dramatic and unexpected drops for those residents that are not at the lake frequently, low level in early fall for dock maintenance, facility maintenance requirements, and outlet channel property owner needs. The Advisory Board came up with a compromise goal "curve", which is shown on the graph provided in *Appendix E-2* along with a table of daily summer goal lake elevations. This curve allows property owners some predictability in regard to lake level at specific times of the year.

This "curve" is a goal, based on average conditions. The actual lake elevation can be affected by timing and intensity of the spring snow melt, heavy rains, summer evaporation rates, wet/dry years, maintenance requirements, etc. If deviations are required due to drought, other unusual weather conditions, maintenance, or other requirements, staff will coordinate these changes with the Advisory Board. Caution should be exercised when bringing the lake up to its Memorial Day goal elevation. It is difficult to control the lake elevation +/- 0.2 feet during high flow events and heavy May and June rains are common. Significantly exceeding the 2125.6' elevation will cause flooding of fields north of the lake.

After the lake level has stabilized in late spring or early summer, the lake regulating gates will normally be closed and the lake level be allowed to drop naturally (due to evaporation and groundwater losses) until October when winter draw down will begin. The outlet gate may be opened if required to keep upper outlet channel water level high enough to meet farmers' requirements or if we have a wet summer and lowering of the lake level is required to stay close to goal elevation curve.

The lake level should be dropped to 2123.9' by Nov. 1st if possible, or in any case before ice begins to form on the lake. Lowering the lake for the winter is needed to accommodate snowmelt events without overloading the capacity of the outlet system to handle it. However, changing of the lake level after ice has formed on the lake can damage docks. Lowering the elevation in October also provides an opportunity for lake front property owners to do dock maintenance work. The original SCS winter elevation recommendation of 2123.6' was raised to 2123.9' due to homeowner water pipe freezing problems at the lower elevation.

If upper watershed snow pack conditions warrant, the lake level can be dropped an additional 1-1.5'. This would normally need to be done by March 1. Notice should be given to Newman Lake homeowners if this is required. The lake level will then be allowed to rise when the upper watershed snowmelt has peaked, usually after March 1. The hydrology model (HSPF) model prepared by Hydmet provides runoff forecasts based on snow pack water content. This guidance is provided as *Appendix E-3*. When using this runoff forecast, we need to take into account not only the current weather conditions (dry, normal or wet), but also ground moisture and water table conditions. Some helpful rules of thumb and tips for lake level control are provided as *Appendix E-4*.

2. OUTLET CHANNEL LEVEL

When not handling heavy runoff from the lake, the outlet channel level above Moffat Rd. can be controlled to meet the needs of adjacent farmers. This means that the radial and slide gates of the channel water control structure should both remain open (the full up position for the radial gate and the full down position for the slide gate) to allow maximum flow most of the year. The radial gate should be closed once spring rains have tapered off, lake level has stabilized, and farmer's fields have sufficiently drained. The slide gate is normally left in the full down position unless farmers indicate a need for a higher level. Contact should be made with property owners along the upper channel at this time to get their input on channel level control, irrigation requirements, etc. They should also be notified of any maintenance requirements that may affect the channel level during the summer.

3. PROCEDURES FOR EXTREME EVENTS

In the case of an extended high runoff year (most likely a 100 plus year event), when there is potential to exceed the capacity of the sump, several options may be considered. One option is to close the channel water control gate to back up more water into the flood plain below the lake. Another option is to divert water temporarily to another area, such as Eller's gravel pit. In any case, property owners downstream of the sump should be notified and if possible, assisted with sandbagging and or other damage protection efforts as required.

F. WATER RIGHTS

To remove or in any way divert water from the channel, a property owner must obtain a water right from DOE. This process currently takes several years. A list of current outlet channel water right holders is provided as *Appendix D-5*. The District cannot and is not required to guarantee water availability for these water right holders. We can trickle additional water from the lake during the summer to keep water levels up above the channel water control gate and above the Moffat road weir. It shall be the policy of the District to accommodate this additional water above the sub-irrigation requirement if it does not severely reduce the summer lake level. Water would be available below the Moffat weir only during times when the lake gates need to be open to maintain or reduce lake level, normally this will be only intermittently during fall, winter and spring months.

G. MONITORING

1. SNOW COURSES

The District uses three manual snow courses and one Snotel site to monitor winter snow pack levels. A map showing location of snow monitoring sites is provided as *Appendix A-3*.

The Quartz Peak Snotel site is operated and maintained by the National Resource Conservation Service (NRCS) under an agreement with the District. A copy of this agreement is provided as *Appendix B-4*. The District currently pays the NRCS $2,500 annually for this service. This site provides information on snow pack levels via satellite as part of NRCS's Snow pack monitoring system. Current and historical information on snow pack levels at this and other Washington NRCS monitoring sites can be obtained from their web site at http://www.wa.nrcs.usda.gov/snow.

The District and the Colville NRCS office currently cooperatively monitor the three manual snow courses, Thompson Creek, Ragged Ridge and Round Top Mountain. An NRCS employee and a District employee do this on a monthly basis (on or up to 5 days before 2/1, 3/1, 4/1 and 5/1) during winter and spring months. Original data records are mailed to NRCS Snow Survey office in Portland, OR. A copy should be filed in the District office for future reference. The District employee must meet the training and physical requirements of the NRCS for this work and shall carry a survival pack as required by NRCS.

2. LAKE LEVEL

The Lake level along with other gage readings (Thompson Creek @ Muzzy Rd. bridge, outlet channel @ outlet gate discharge, Starr Rd. Bridge, Channel water control gate, Moffat Rd. bridge, and the Sump) shall be monitored regularly by the District Flood Control Technician or other District employee. More frequent, even daily, monitoring is required during heavy rains or snowmelt events. A log form (see *Appendix E-1*) shall be completed each time the gages are read. Weather or other observations and activities accomplished (maintenance or gate opening and closing, for example) shall also be recorded on these forms. Original log forms shall be kept on file in the Spokane County Engineer's office.

H. MAINTENANCE

1. POLICY

Maintenance shall be done in accordance with the SCS (NRCS) Maintenance and Operation Agreements and Plans (See sections III.B and III.C above and *Appendix B-2*). In summary "the system shall be maintained in prompt, orderly and regular fashion so that the

works of improvements shall continue to function in the same manner as at completion of construction."

2. LOG

The maintenance activities should also be reported, recorded and logged along with inspection reports in an Inspection and Maintenance log file to be kept at the District office. The file should include a description of work accomplished, date, cost, any invoices or contract documents, photos, permits, etc.

3. PERMITS

The channel and sump are considered Shorelines associated with Newman Lake. Therefore, work in these areas may require a Shoreline Development Permit. Also much of this area is below the base flood elevation and therefore work may also require a flood plain development permit. Any work below ordinary high water in the channel and sump does not usually require a Hydraulic Project Approval as Washington State Department of Fish and Wildlife (WDFW) considers the channel and sump a man-made stormwater channel and not regulated under the Hydraulic Code. However, as a courtesy, JARPA's should be routed to WDFW for comment and in case this interpretation changes. Dredge and Fill below ordinary high water in the sump and channel may also require a permit from Army Corps of Engineers. Most repair and maintenance work is usually covered by a nationwide permit. Also, the Newman Lake Channel was surveyed and is considered eligible for listing on the National Historic Register. Consultation with the appropriate state or local historical agency may be required for activities in the Channel. The Historic Property Inventory Form for the "Newman Ditch" is attached as *Appendix D-6*.

4. PROGRAM

The following highlights specific items (based on items identified in the Agreement) needing annual maintenance attention:

a. Vegetation:
   - i. Reseed, resod, and fertilize areas of poor stand or areas destroyed by erosion. If necessary, restore eroded areas before reseeding.
   - ii. Noxious weeds should be cut, pulled or sprayed with approved herbicide. Observe state/local ordinances regarding spraying and do not burn any vegetative materials along or adjacent to the floodwater barrier.

b. Outlet Channel:
   - i. Remove sediment bars and properly dispose of them outside channel perimeter.

ii. Remove large growth below scour line in outlet channel if diverting flow and causing erosion.
iii. Remove and properly dispose of debris.
iv. Replace reinforce or extend riprap where needed.
v. Keep access for maintenance and maintain travel ways in usable condition.
vi. Rehabilitate damaged pipe inlets from field or side channels.
vii. Replace eroded soil adjacent to pipes or structures.
viii. Any repair work necessary on utilities extending through the channel section shall be carried out to restore disturbed areas to original construction requirements.

c. Flood water Barrier:
   i. Replace soil removed by rodents.
   ii. Do not allow grazing of vegetation upon or along floodwater barrier.
   iii. Maintain vegetation along Lakeside of floodwater barrier for wave protection.
   iv. Establish a fire plan that meets with service approval to extinguish fires as soon as possible.
   v. The floodwater barrier segments which have settled should be restored to designed top grade and cross-section, as shown on construction drawings.
   vi. Prohibit vehicular, cattle or horse traffic along floodwater barrier except as required for maintenance purposes.

d. Lake regulating and channel water control structures:
   i. Keep stilling basin free of soil and debris.
   ii. Restore eroded or damaged earth material, rock riprap or crushed rock surfacing around the structure.
   iii. Restore concrete that has deteriorated.
   iv. Maintain in proper working order gates, trash racks, log boom, and other metal works. Promptly remove debris, which may hamper their function.
   v. Maintain fences in good condition.
   vi. Grease gate fittings twice a year.
   vii. Repaint, as needed all surfaces requiring protection by painting and or galvanizing.

e. Sump area:
   i. Monitor annually the amount of siltation occurring onto the exposed gravely infiltration areas. If any appreciable siltation is noted from monitoring, a program to remove and dispose of silt shall be initiated.

ii. The sink should be scarified as needed in years of low runoff to break up any minor siltation and vegetation.

iii. Remove any restrictions to flow spreading with in the sump disposal area.

iv. Review the dike and existing overflow spillway annually for structural integrity of the earth fill, including vegetative cover. If discrepancies are noted, they shall be repaired promptly.

v. Any repair work necessary on utilities extending through the dike shall be carried out to restore the disturbed area to original construction requirements.

f. Gages:

i. Maintain in usable and readable condition.

IV. WATER QUALITY IMPROVEMENT PROGRAM

A. OBJECTIVES

The missions of the District for Lake water quality improvement are as follows:

- To provide leadership and a focus for community efforts to improve the water quality of Newman Lake.
- To work with landowners and public and private agencies to minimize impact of watershed activities on Lake water quality.
- To monitor Lake water quality and operate and maintain the Lake aeration and alum injection systems to maximize their benefit.

With the preparation of the Comprehensive Plan of Development for Stormwater Control in the Newman Lake Watershed (Comprehensive Plan), a follow up to the Phase II of the Lake Restoration program, the District is working toward implementation of this plan as its main water quality objective. Implementation of this plan is also required to obtain NPDES permit renewal from DOE for operation of Alum Injection system. The implementation of this plan will incorporate all of our water quality missions and give our water quality improvement activities a whole watershed approach and direction. The operation of our facilities (aerator and alum injection) will also be done within the context of this plan.

B. IMPLEMENTATION OF THE COMPREHENSIVE PLAN

The Outline for Implementation of the Comprehensive Plan of Development in the Newman Lake watershed has several major parts. Implementation requires the cooperation and assistance of the Newman Lake community, including the Newman Lake Watershed Committee and the Newman Lake Property Owners Association. The Implementation Plan includes the following:

a. Land Use Regulation Enforcement: The use of District and community volunteer resources to implement and encourage enforcement of existing land use regulations (Federal, State and local agencies) in the Newman Lake watershed.
b. Education of the Community: This will take the form of regular newsletters, Watershed Committee meetings, preparation of educational materials, and involvement of residents and students in restoration projects and monitoring, etc.
c. Restoration Projects: Work with property owners on riparian, wetland and floodplain preservation and restoration projects and other structural Best Management Practices (BMP's) in the watershed, with priority to Thompson Creek.
d. Septic Systems: Plan includes efforts to work with the Spokane Regional Health District to improve septic compliance and monitoring in-lake for problem areas.
e. Operation of the Alum Injection and Aerator Systems: These systems are needed to control internal recycling of nutrients.

f. Monitoring: A comprehensive lake and watershed water quality monitoring program is also part of the plan.
g. Annual Report: The final major component of the Implementation Plan is a comprehensive Annual report covering all district and volunteer activities in the watershed and results of water quality monitoring.

A detailed outline of Plan implementation, including target dates and estimated funding and manpower efforts is attached as *Appendix B-5*.

C. HYPOLIMNETIC AERATOR OPERATION

1. DESCRIPTION OF FACILITIES

The Newman Lake Aerator system was installed to raise the dissolved oxygen levels of the Hypolimnion (lower cold layer of the lake) during the summer when the Lake stratifies. When the lake begins to warm in the spring, the lighter warmer water stays on top and the heavier colder water layer on the bottom. The warmer layer on top stays oxygenated from the surface air movement. The lower layer does not mix with the surface, and therefore during the summer the lower layer doesn't receive any added oxygen. By injecting oxygen into the hypolimnion, the Aerator not only improves the habitat for fish and other aquatic species, it also helps cap the nutrient rich sediments to keep them from recycling phosphorus back into the water column.

The Aerator system includes two 50- HP air compressors and associated oxygen generation equipment located in the Compressor Building on Sutton Bay Rd. A two-inch oxygen line runs from the Compressor Building down the hill along a ten-foot wide easement to the Lake, and then approximately 1200 feet along the lake bottom to the aerator itself. In the lake, a 60 HP pump circulates 9,450 g.p.m. of lake water down through a large nine-foot diameter cone and out through a 24-inch diameter, 120 foot long distribution manifold. The oxygen is injected at the top of the cone and is dissolved into the water as it slows and expands into the bottom of the cone. After leaving the cone, the oxygenated water is ejected through 2 ½ inch diameter holes every 2 feet along the north face of the distribution pipe. The natural circulation of the lake then carries the oxygenated water throughout the Lake. See Aerator Facility Plans attached as *Appendix A-6* for further details.

2. OPERATING POLICY

To maintain the highest levels of dissolved oxygen possible throughout the summer, the aerator system should be operated at maximum capacity (both compressors and oxygen generators) beginning as soon as the lake begins to stratify in the spring. The goal is to keep oxygen levels in the hypolimnion above 4 mg/l. However, per Dr. Barry Moore's 1998 Newman Lake Water Quality Monitoring Report (1/29/99), all the data from Newman and other lakes indicates that the use of aerators increases the oxygen consumption rates. To keep oxygen at acceptable levels at the sediment /water interface, oxygen must be delivered in excess of the

actual demand. For Newman Lake this means operating the system at full capacity for the entire period of summer stratification. The operation of the system must therefore be coordinated closely to the water quality monitoring, including any summer volunteer dissolved oxygen monitoring, for indications of turnovers beginning and ending.

3. MONITORING

When the aerator system is operating, the aerator technician, or a trained backup staff member, shall monitor system operation daily. A compressor gage record form provided by Rogers Machinery shall be completed (see *Appendix F-2*). An original of these records shall be mailed to Rogers Machinery at the end of the month with a copy retained in the Aerator file. Indications of abnormal operation noted by the aerator technician shall be immediately brought to the attention of the Newman Lake Engineer. Also an Aerator Pump record form shall be completed daily (see *Appendix F-3*).

4. MAINTENANCE PROGRAM

The Operation and Maintenance Manual for all Aerator Equipment is on file in the Newman Lake Engineer's office and in the Compressor Building. This manual includes operating and preventative maintenance requirements, parts lists, etc.

a. Compressors and AirSeps: A qualified machinery maintenance contractor should accomplish all Compressor Building Aerator Equipment maintenance, repair and modifications. This is currently Rogers Machinery (phone 922-0556). It is also recommended that when possible, Rogers should accomplish initial spring start-up as frequent problems seem to arise after the equipment has been sitting all winter. Compressors require servicing at 1000, 2000, and 8000 hour intervals. The AirSeps and the Dryer require filter service and inspection every 6 months of operation.

b. Pump: The FLYGT circulating pump, located in 30 feet of water at the bottom of the Lake and is difficult to access. In the past, routine preventative maintenance was not considered cost effective. Sensors in the lake will shut down the compressors on shore if the pump is overheating or if the pump motor has moisture in it. This is what indicated a pump leak problem in 1993. At that time the pump was removed to accomplish seal repairs that turned out to be a manufacturer's problem. However, these sensor indicators seem to trip without cause and are usually bypassed, at recommendation of Electrician (Power City Electric) and Spokane Pump. In mid-summer 2000, the pump shut off and could not be restarted. Upon pulling the pump it was determined that a mounting bolt for one of the propeller blades had failed. The blade was dragging against the pump wear ring, wearing a ½" off the propeller. The blade had to

Pump Being Transferred to Shore at DFW Boat Launch - July 1993

be replaced at a cost of about $2500. Also the bearings and seals showed signs of excessive wear after 7-8 years of operation without servicing and those were also replaced. Spokane Pump (currently the only authorized FLYGT pump service center in Spokane) now recommends that the pump be pulled and overhauled at 5-year intervals. The next overhaul should then be in the fall of 2005. It is recommended that pulling the pump be done in early October when alum injection is complete. The pump should be able to be returned within one month. This work should be scheduled and a contract issued well in advance as capable dive crews can have very full schedules. For details on costs and contractors used, see the Aerator correspondence file. Meters have also been added to the pump controller box so power demand can be monitored daily. This will help give us an indication in advance when repairs may be required, especially with sensors malfunctioning.

c. Start-Up/Shut-down Procedures: See *Appendix F-1*.

d. Reserves: Approximately $70,000 is maintained in Fund reserves for major Aerator equipment repair or replacement costs.

D. ALUM INJECTION SYSTEM

The goals of the micro-floc alum injection system at Newman Lake are to:

a. Increase summer lake water clarity by reducing phosphorus availability, in turn reducing algae biomass.
b. Reduce the absolute amount of blue-green algae, and lower the percentage which this group represents in the summer phytoplankton.

The system uses the aerator circulation system to distribute alum throughout the lake on a continuous basis. Injection can be timed during lake turnovers to maximize the benefits. Alum is pumped from the Compressor Building on Sutton Bay Road through ¾" plastic lines that run down the hill beside the oxygen lines and lay on the Lake bottom and into nozzles located on the Aerator distribution manifold ports. For further details on operating rationale, facilities, maintenance, plans, etc, see the Alum Operating Plan attached as *Appendix F-4*.

E. SUMMARY OF WATERSHED AND WATER QUALITY STUDIES

Copies of these studies and reports are on file in the office of the Newman Lake Engineer.

1. INITIAL STUDY OF NEWMAN LAKE (1974)

The Newman Lake study in 1974 was part of a regional investigation. The purpose of the investigation was to determine the extent and nature of non-point source enrichment and the hydrology of several recreational lakes in Eastern Washington. This report included the first major limnological study, as well as a hydrological and watershed characterization, of Newman Lake.

2. WATERSHED WORK PLAN (1974)

The Soil Conservation Service (SCS), now known as the Natural Resource Conservation Service (NRCS), put this plan for the Newman Lake Watershed together in 1974. The Work Plan primarily examined the feasibility of the design and construction of an outlet structure and canal; however, this plan also outlined several problems in the watershed. Mentioned most notably were: (1) problems with the growing density of homes and roads around the lake; (2) septic tank problems; (3) erosion from logging activities; (4) the increasing number, size and use of access roads, off-road recreational vehicles and; (5) the lack of land-use planning. Suggestions were made to address these problems, but efforts to implement them were limited.

3. WASTEWATER FACILITIES PLAN AND SUPPLEMENT (1978)

This plan, prepared by the consulting firm URS for Spokane County, reviews options and planning level costs for collecting and treating wastewater from homes in the Newman Lake area.

4. PHASE I RESTORATION FEASIBILITY STUDY (1988)

This study was prepared by the WSU, Water Research Center, with DOE funding assistance. The goal of this study was to perform a comprehensive limnological evaluation, to identify causes of specific problems, and to evaluate potential strategies and solutions for dealing with the problems. The report represents the concern and determination of Newman Lake residents to investigate problems and find ways of restoring Lake water quality to desirable conditions. The foundations of some restoration measures were implemented with positive results, although additional efforts to fully achieve the desired goals were set forth in the Newman Lake Restoration Phase II report.

5. PHASE II RESTORATION – FINAL REPORT (1997)

This report evaluated the effectiveness of improvements and restoration work done during Phase II of the Newman Lake Restoration. Beginning in 1989, this Phase II work included estimation of a nutrient budget, implementation of an alum treatment, construction of the hypolimnetic oxygenation system, completion of a septic system survey, and establishment of a watershed committee. The nutrient budget allowed for a general determination of sources of nutrients; hence, this explains the in-lake focus on nutrient inactivation and hypolimnetic oxygenation. The Phase II report includes these nutrient budget calculations and results. It also includes results of extensive physiochemical and biological testing of the Lake and inlets from 1989-1995. The report concludes that the oxygenation system has been successful. However, the effectiveness of the 1989 alum treatment had greatly diminished after 5 years. The report concludes that in-lake restoration work should continue with the operation of the alum injection system and the hypolimnetic oxygenation system. It also emphasizes that a strong watershed education and management program to reduce nutrient inflow to the lake is the most important factor to improving the water quality at Newman Lake.

6. THE NEWMAN LAKE WATERSHED PLAN (1992)

The goal of this plan was to reduce external nutrient loading to Newman Lake by means of implementing watershed management strategies. It worked on building a coalition of Newman Lake area residents, timber industry representatives, agricultural interests, and governmental agencies interested in protecting the lake with formation of the Newman Lake Watershed Committee (NLWSC). The NLWSC focused on water quality problems related to development in the watershed, chiefly erosion from private roads, inadequate waste disposal and control of stormwater runoff. Included in the Watershed Plan was an Erosion Hazard Inventory (Issacson, 1991), that identified major sources of erosion in the watershed. The main sources of sediment included stream bank erosion, culverts on logging roads, the road collection system of driveways and main county road ditches. The "Sewage System Survey For the Newman Lake Watershed" (Spokane Regional Health District, 1990) is also included in the Plan. Of the 308 systems tested in this survey, only 16 were identified as failing. In addition, the informative booklet, "The Lake Book- A Homeowner's Guide for Lake Preservation" was developed by the NLWSC and has been beneficial to many of the homeowners in the watershed. As a result of the Watershed Plan, an action plan was implemented in 1991. In mid-1992, responsibility for managing the Plan was transferred to the Newman Lake Property Owners Association (NLPOA). The action plan was mainly used to educate and inform the homeowners on ways to improve the watershed and ultimately protect the lake form nutrient loading. As a result of the Watershed Plan, a few landowners made efforts to improve riparian and lakeshore habitat, but these were small in scale.

7. THOMPSON CREEK WATERSHED ANALYSIS (1997)

The Department of Natural Resources (DNR) completed this Watershed Analysis. The primary goal was to assess the cumulative impacts logging may be having on the chemical and physical water quality entering Newman Lake. Management prescriptions were developed, based on the assessment, which will mitigate the effect of cumulative forest practices. Note that these prescriptions relate solely to practices under DNR's jurisdiction of the Forest Practice Act. These activities include timber harvesting, and road construction, use and maintenance related to forest practices. Roads were the major contributor to the sedimentation problems. Therefore, the Thompson Creek Prescriptions include erosion protection and surface runoff control for new and existing roads, no new roads within 200 feet of typed water except for protected crossings, directing skid trails away from streams, and re-vegetation of exposed soils. If enforced, these Prescriptions should significantly reduce the nutrient contribution from forest practices.

The specific focus of the analysis was on rates of sediment delivery from logging units and forest roads, as well as off-road recreational vehicle (ORV) use on private timberlands. Highlights and a review of this analysis are provided on page 29 of the Comprehensive Plan (it is summarized in the following paragraph). In this report, WSU expresses some concern regarding the accuracy of the analysis with regard to sediment transport. However, the information in this report is invaluable in establishing a more complete representation of the watershed system. Included in the analysis is detailed information and mapping of watershed hydrology, riparian functions, stream channels, fish habitats, and water quality.

8. COMPREHENSIVE PLAN OF DEVELOPMENT FOR STORMWATER CONTROL IN THE NEWMAN LAKE WATERSHED (1997)

This Plan was prepared by the WSU Water Research Center, under contract with the District. The overall goal of this plan was to recommend measures that reduce the erosion potential in the watershed, decrease the amount of sediment being transported to the lake, and ultimately reduce in-lake phosphorus levels responsible for undesirable algae blooms. This plan was required [per RCW 86.15.110] before any stormwater control improvements (specifically the alum injection system) could be implemented. Research findings and information developed during the Phase II Restoration Study provided the basis for this plan. The plan was an addendum to the Phase II report providing additional Lake inlet nutrient loading investigations and reviewing short-term and long-term alternatives for stormwater control improvements, including in-lake restoration alternatives. Implementation of the recommendations of this plan is a primary goal of the District. This is discussed in paragraph IV.B and a full copy of the Implementation Outline is attached as *Appendix B-5*.

V. INVASIVE AQUATIC SPECIES CONTROL

In September 2002, Eurasian water milfoil was discovered in Newman Lake. The infestation was limited to the southeast area of the lake mostly around the outlet gate area and with three smaller infestation areas just north of the boat launch and a couple of plants at the far north end near the outlet of Thompson Creek. The infestation seemed to be young with most plants in first year of growth. We applied for and received a $50,000 Early Infestation Program grant from DOE's Aquatic Weed Management Fund to begin control efforts as soon as possible in the spring of 2003. This grant will pay 87.5% of Newman Lake milfoil management efforts over the next 3 years. We used these funds in 2003 to do surveys and perform two granular 2,4D treatments of infested areas in the Lake and Outlet channel along with some hand pulling. Further applications for funding from DOE will require preparation and approval of an Integrated Aquatic Vegetation Management Plan for Newman Lake.

VI. APPROVAL AND REVISIONS

Initial Approval: The staff of the Spokane County Engineer prepared this Flood Control Zone District Policy and Procedures Manual. By signature below the County Engineer as Administrator of the District recommends this Manual for approval by the District Supervisors, the Spokane County Board of County Commissioners. By their signatures below a majority of the Advisory Board concurs in this recommendation of approval. Final approval and implementation of this manual is effective upon signature of a majority of the District Supervisors, the Spokane County Board of County Commissioners.

Revisions: The Chairman of the Board of County Commissioners, acting on behalf of the Board, or a majority of the Board, is hereby authorized to execute, by and on behalf of the District at other that open meeting, revisions, updates or amendments to the main body of this Manual. Update or revision of Appendixes may be made with the approval of the District Administrator and with notice and copies given to Advisory Board members.

RECOMMEND FOR APPROVAL: _____

Ross E. Kelley, PE
Administrator, Newman Lake Flood Control Zone District

ADVISORY BOARD CONCURRENCE:

_____
James F. O'Donnell
Position 1

_____
Lorne T. Burley
Position 2

_____
Linda Underwood
Position 3 (NLPOA President)

_____
Warren C. Heylman
Position 4

_____
<Vacant>
Position 5

_____
~~Delbert Owen~~ VACANT
Alternate Position 1

_____
Jack Praxel
Alternate Position 2

_____
Wendy Burley
Alternate Position 4

VI. APPROVAL AND REVISIONS (*continued*)

APPROVED BY THE BOARD this 7th day of December 2004

BOARD OF COUNTY COMMISSIONERS
OF SPOKANE COUNTY, WASHINGTON
AS EX-OFFICIO SUPERVISORS OF THE
NEWMAN LAKE FLOOD CONTROL
ZONE DISTRICT

PHILLIP D. HARRIS, Chairman

M. KATE McCASLIN, Vice-Chair

ABSENT

TODD MIELKE, Commissioner

ATTEST:
VICKY M. DALTON,
Clerk of the Board

By: DANIELA ERICKSON
Deputy

No. 4 1034

BEFORE THE BOARD OF COUNTY COMMISSIONERS
OF SPOKANE COUNTY, WASHINGTON
AS EX-OFFICIO SUPERVISORS OF THE NEWMAN LAKE FLOOD CONTROL ZONE DISTRICT

IN THE MATTER OF ADOPTING THE NEWMAN LAKE FLOOD CONTROL ZONE DISTRICT POLICY AND PROCEDURES MANUAL	)))	RESOLUTION

WHEREAS, pursuant to the provisions of the RCW Section 86.15.050 the Board of County Commissioners shall be ex-officio by virtue of their office, supervisors of the Newman Lake Flood Control Zone District; and

WHEREAS, pursuant to RCW Section 86.15.060 administration of the affairs of the Newman Lake Flood Control Zone District shall be the County Engineer; and

WHEREAS, the Newman Lake Flood Control Zone District Policy and Procedures Manual will provide overall operating policy and day-to-day guidance on Newman Lake Flood Control Zone District operations; and

WHEREAS, pursuant of RCW Section 86.15.060, County Engineer Ross E. Kelley, as Administrator of the affairs of the District, has recommended that Newman Lake Flood Control Zone District Policy and Procedures Manual be adopted; and

WHEREAS, pursuant of RCW Section 86.15.070, the District Advisory Committee has concurred with the recommendation that Newman Lake Flood Control Zone District Policy and Procedures Manual be adopted.

NOW, THEREFORE, BE IT HEREBY RESOLVED by the Board of County Commissioners of Spokane County, as ex-officio supervisors of the Newman Lake Flood Control Zone District, that the attached Newman Lake Flood Control Zone District Policy and Procedures Manual be adopted, commencing on January 1, 2005.

NOW, THEREFORE, BE IT FURTHER RESOLVED, the Chair of the Board of County Commissioners or a majority of the Board, is hereby authorized to execute, by and on behalf of the District at other than an open meeting, all modifications or amendments in conjunction therewith.

ADOPTED by the Board of County Commissioners of Spokane County, Washington this 7th day of December, 2004.

BOARD OF COUNTY COMMISSIONERS
OF SPOKANE COUNTY, WASHINGTON

PHILLIP D. HARRIS, CHAIR

M. KATE MCCASLIN, VICE-CHAIR

ABSENT

TODD MIELKE, COMMISSIONER

ATTEST:
VICKY M. DALTON
CLERK OF THE BOARD

BY: Daniela Erickson
DANIELA ERICKSON, DEPUTY

LIST OF ABBREVIATIONS

Advisory Board- Newman Lake Flood Control Zone District Advisory Board

BCC- Spokane County Board of County Commissioners, Supervisors of the District

BMP- Best Management Practices

Comprehensive Plan- Comprehensive Plan of Development for Stormwater Control in the Newman Lake Watershed, report prepared by WSU, June 1997

WDFW- Washington State Department of Fish and Wildlife

District- Newman Lake Flood Control Zone District

DNR- Washington State Department of Natural Resources

DOE- Washington State Department of Ecology

JARPA- Joint Aquatic Resource Permit Application

NLPOA- Newman Lake Property Owners Association

NLWSC- Newman Lake Watershed Committee

NRCS- Natural Resources Conservation Service, agency of United States Department of Agriculture (USDA) and successor to the Soil Conservation Service (SCS)

RCW- Revised Code of Washington

SCS- Soil Conservation Service, predecessor to the NRCS

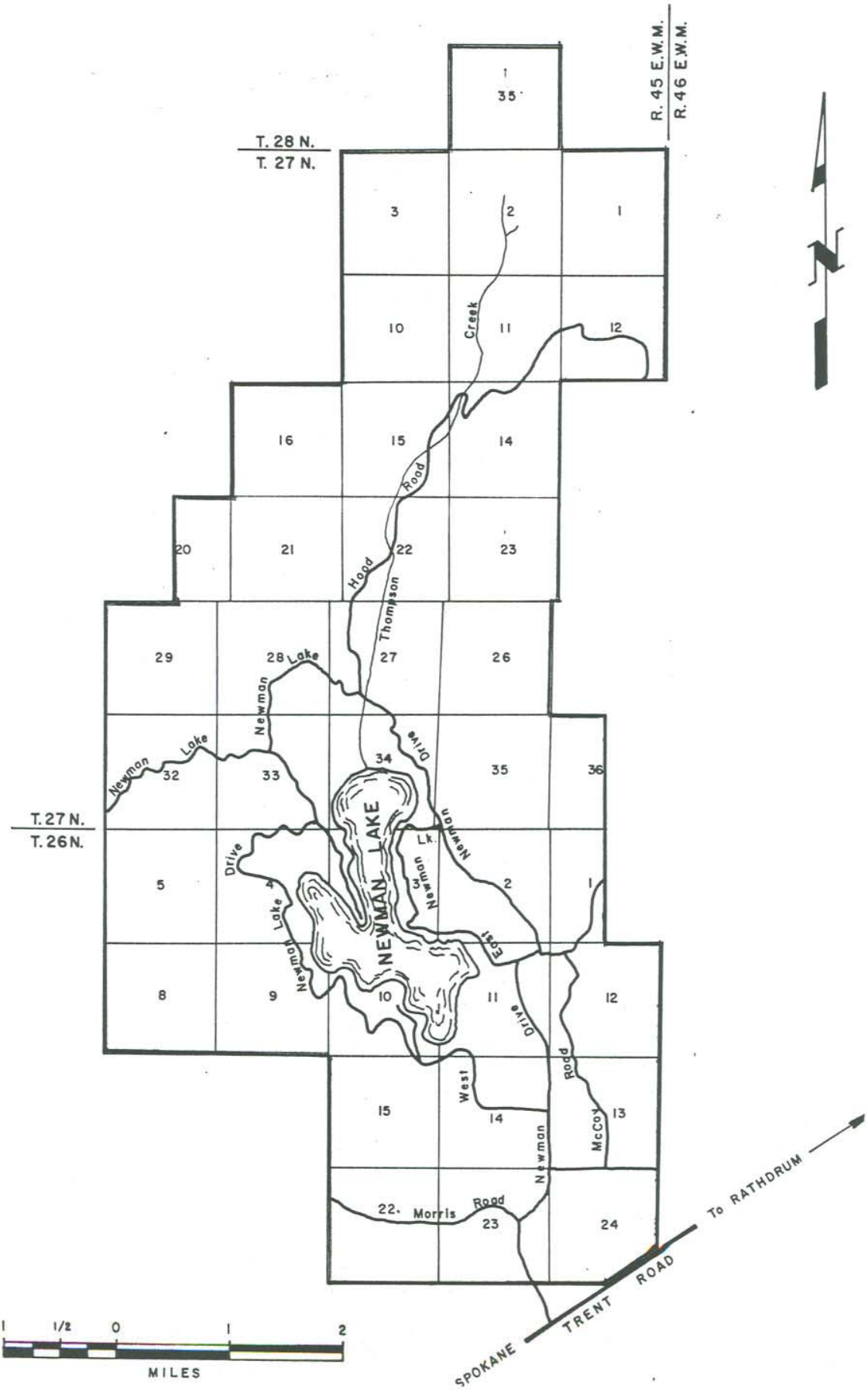
WSU- Washington State University

APPENDIX A: DISTRICT MAPS AND FACILITY PLANS

A-1: MAP OF DISTRICT BOUNDARIES

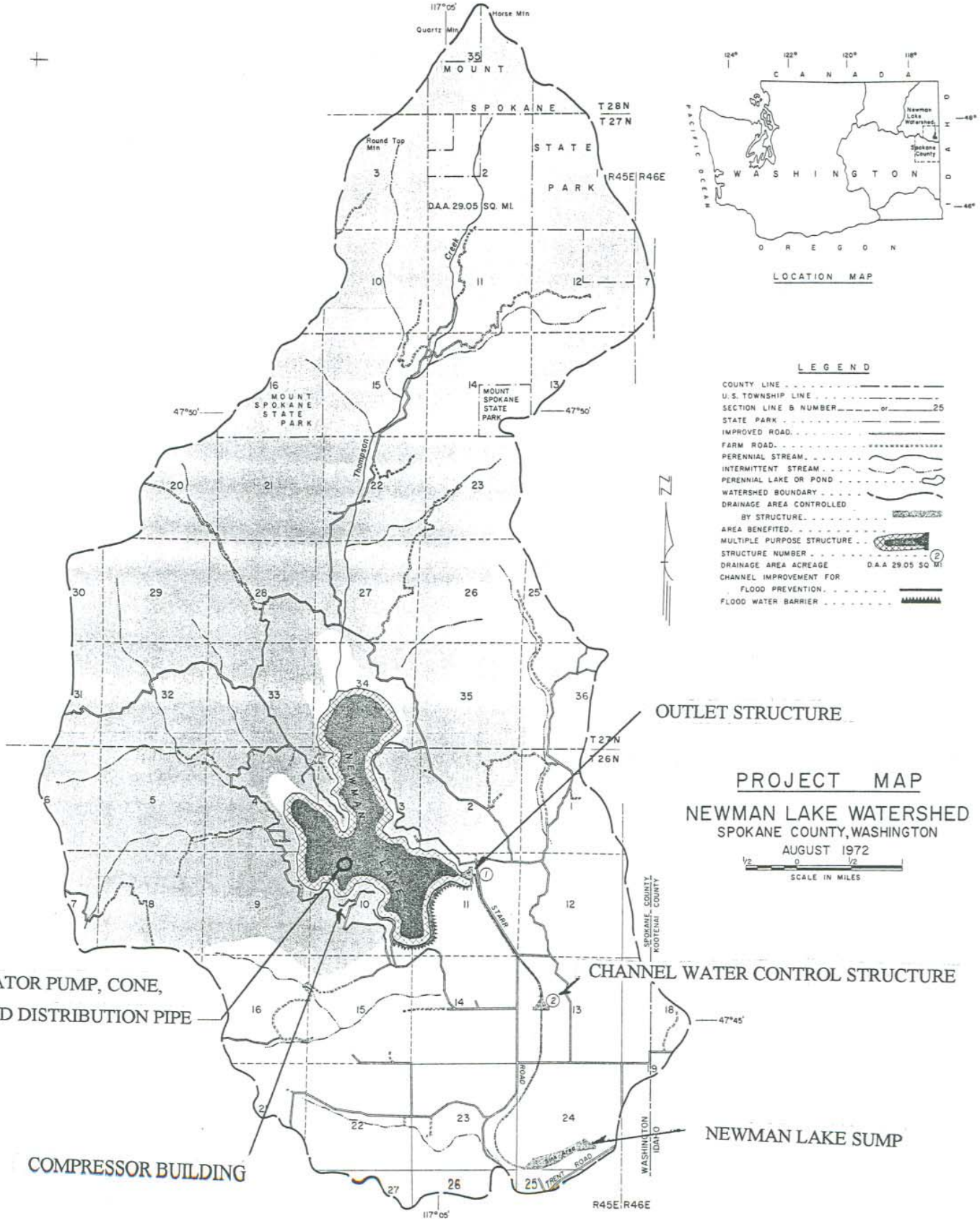
NEWMAN LAKE
FLOOD CONTROL ZONE DISTRICT

AP OF DISTRICT BOUNDARIES



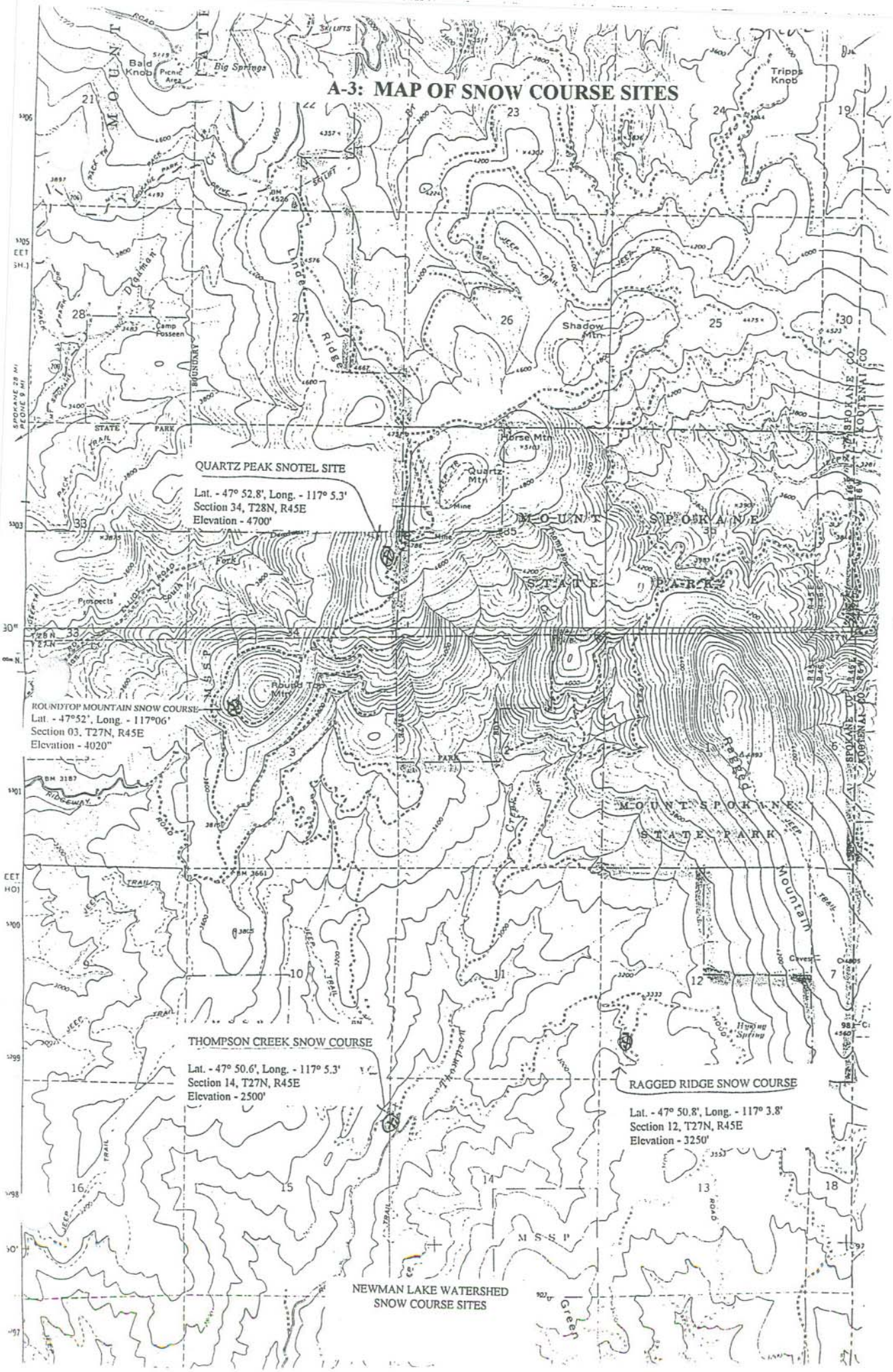
A-2: NEWMAN LAKE WATERSHED MAP WITH FACILITY LOCATIONS

A-2: NEWMAN LAKE WATERSHED MAP WITH FACILITY LOCATIONS

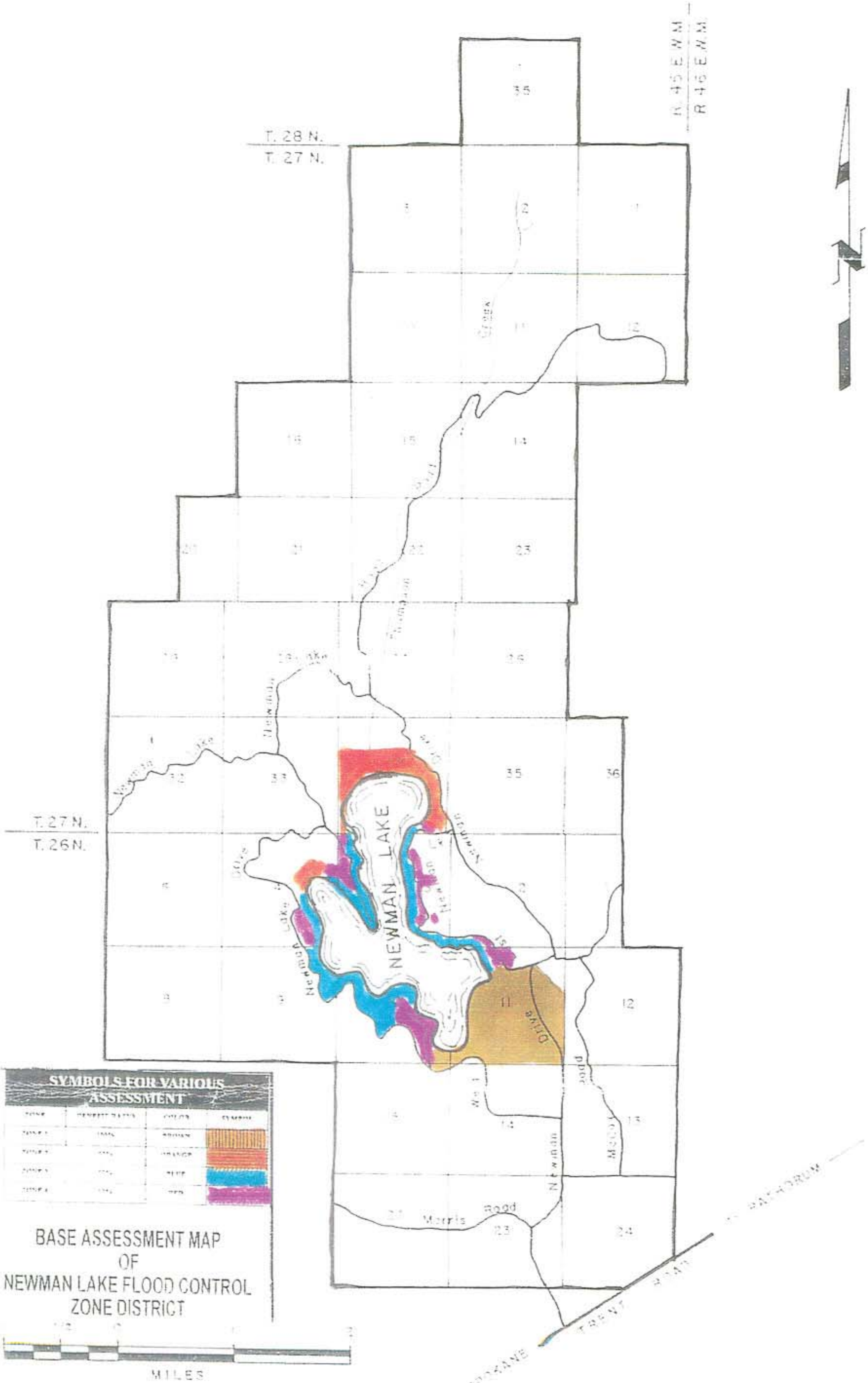


A-3: MAP OF SNOW COURSE SITES

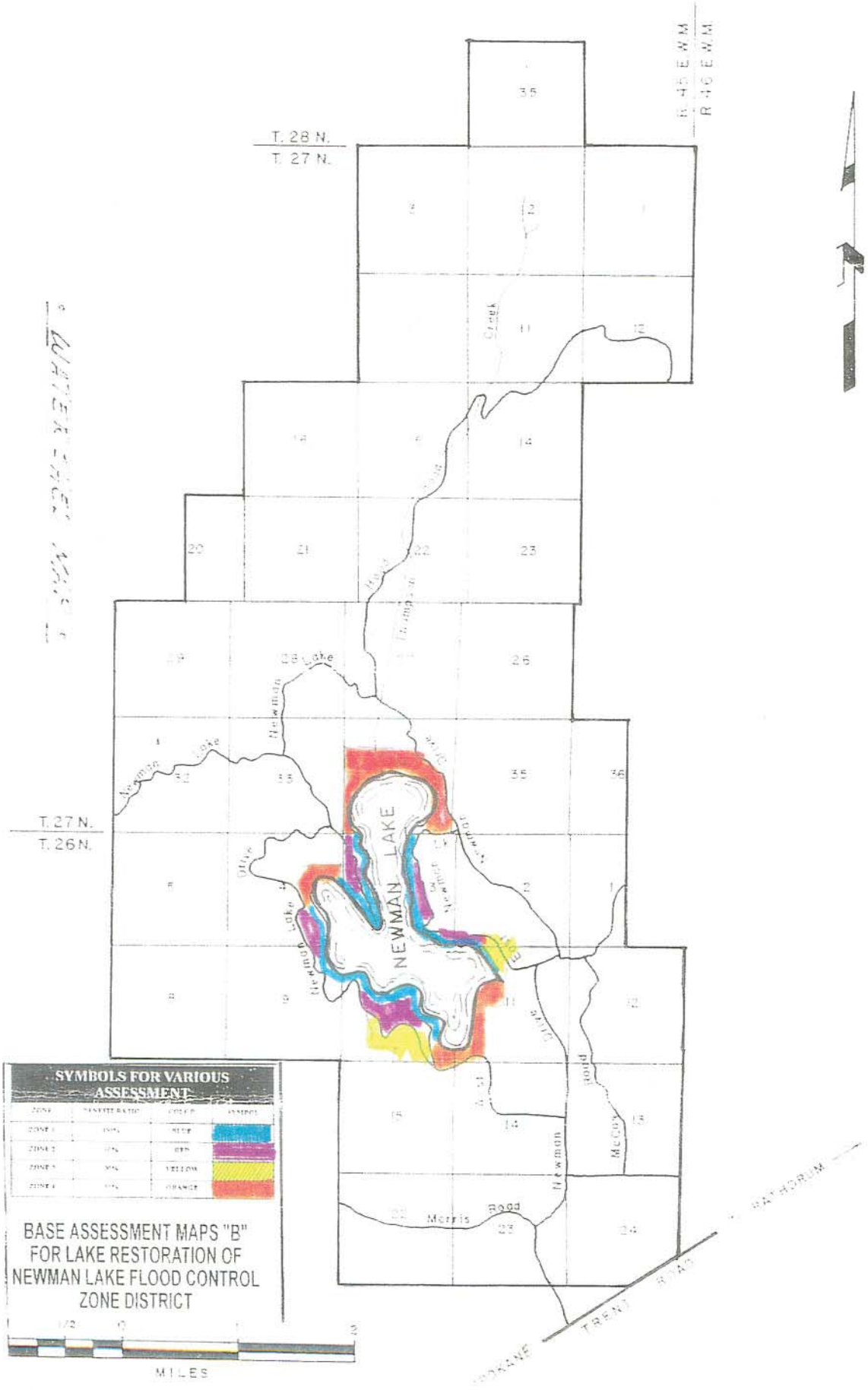
A-3: MAP OF SNOW COURSE SITES



A-4: SUMMARY BENEFIT AREA MAPS

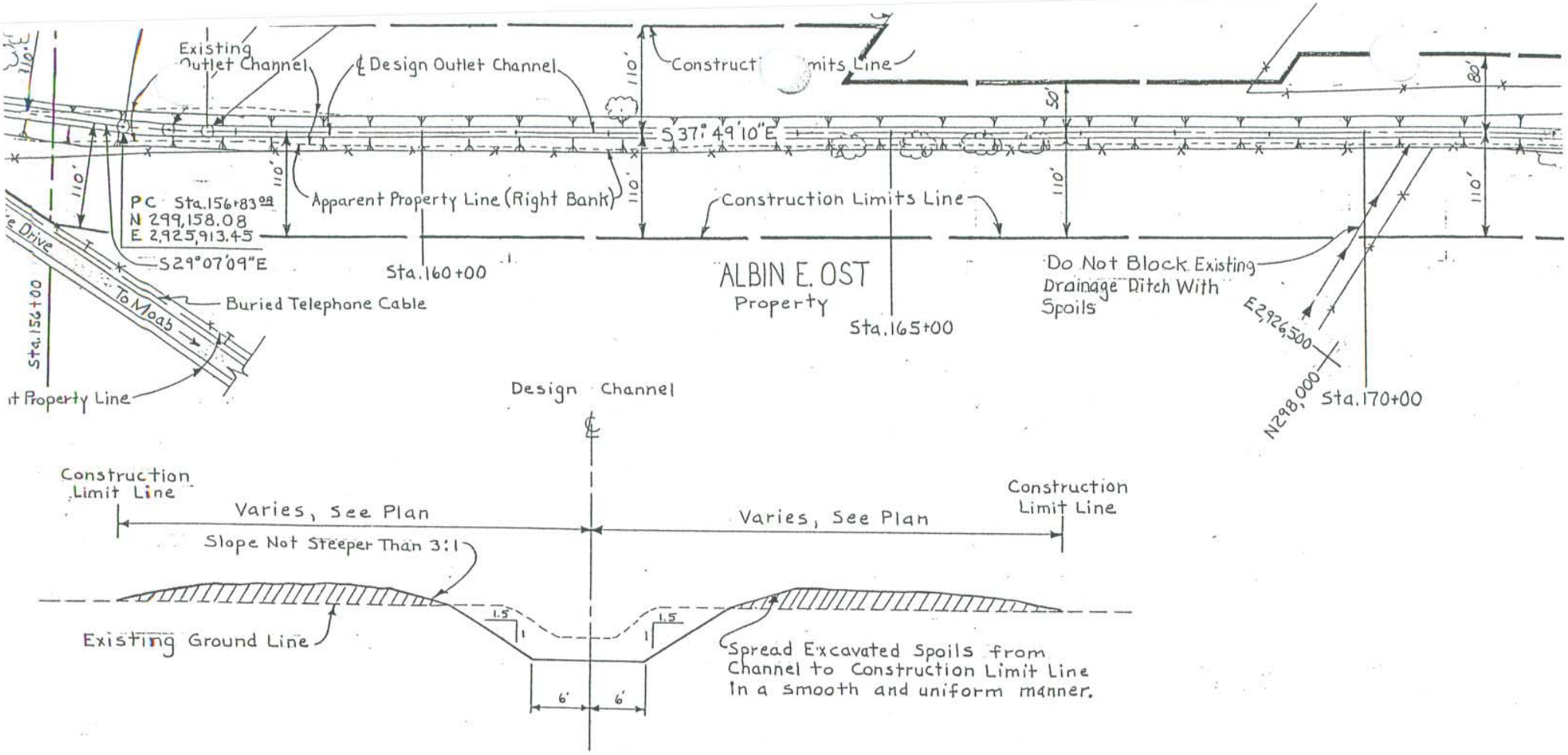


HEYLMAN MARTIN & ASSOCIATES
100 N. STEVENS - PARKADE PLAZA
SPOKANE, WA 99201



HEYLMAN MARTIN & ASSOCIATES
100 N. STEVENS - PARKADE PLAZA
SPOKANE, WA 99201

A-5: FLOOD CONTROL FACILITY PLANS

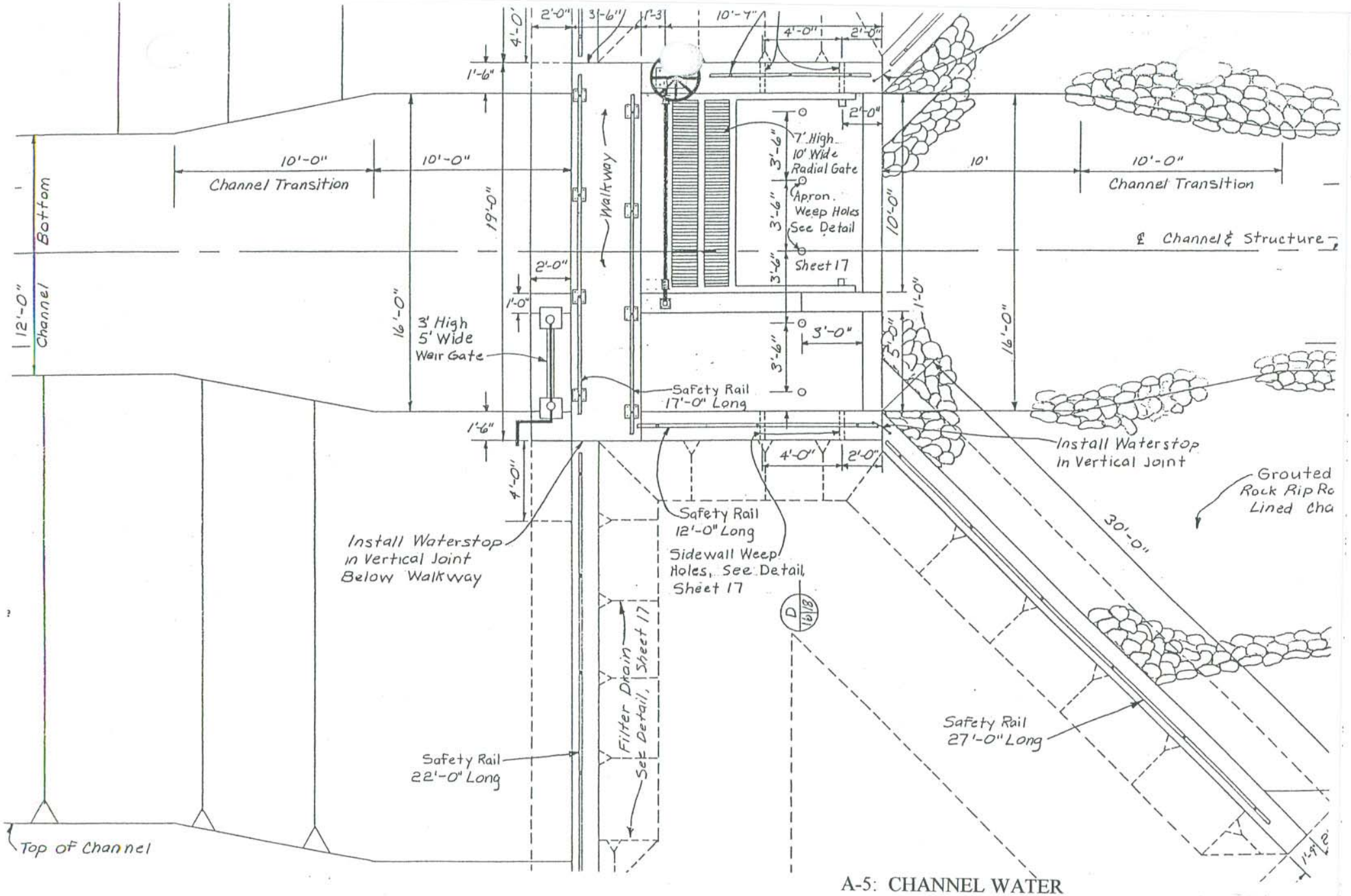


OUTLET CHANNEL CROSS SECTION

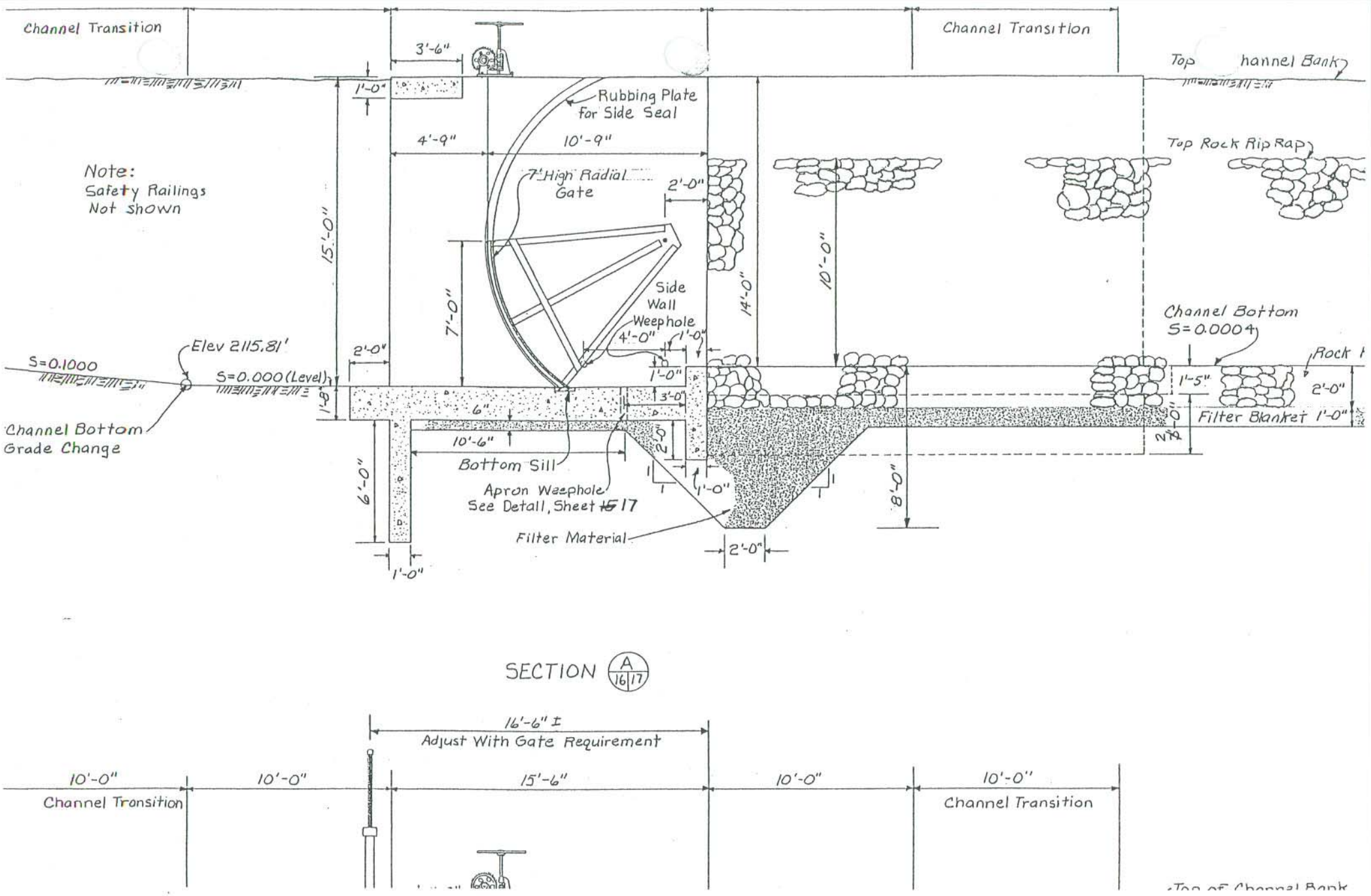
From Newman Lake Drive to Moffat Road

Sheet 3

A-5: OUTLET CHANNEL
TYPICAL CROSS SECTION

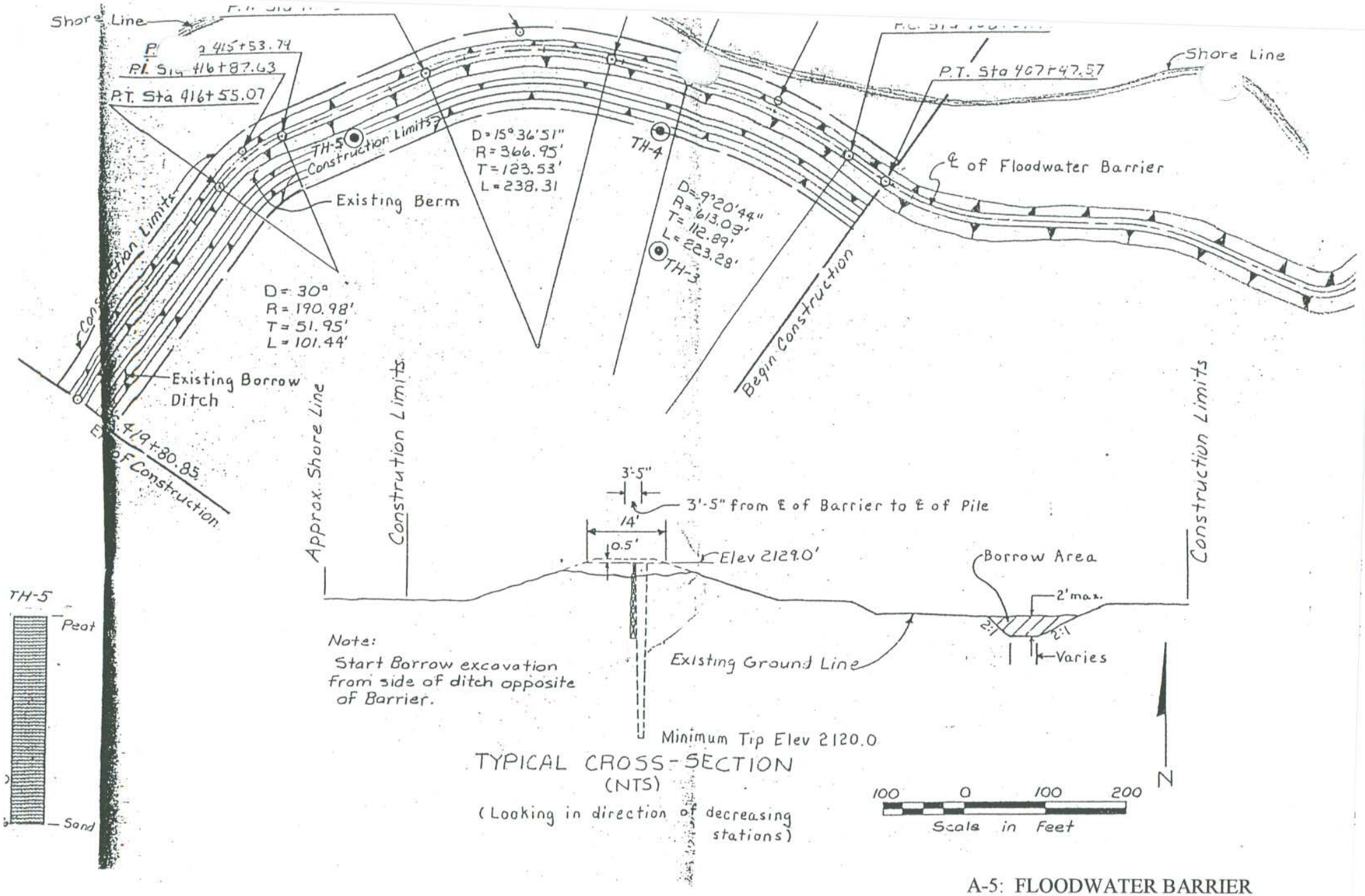


A-5: CHANNEL WATER CONTROL STRUCTURE PLAN VIEW



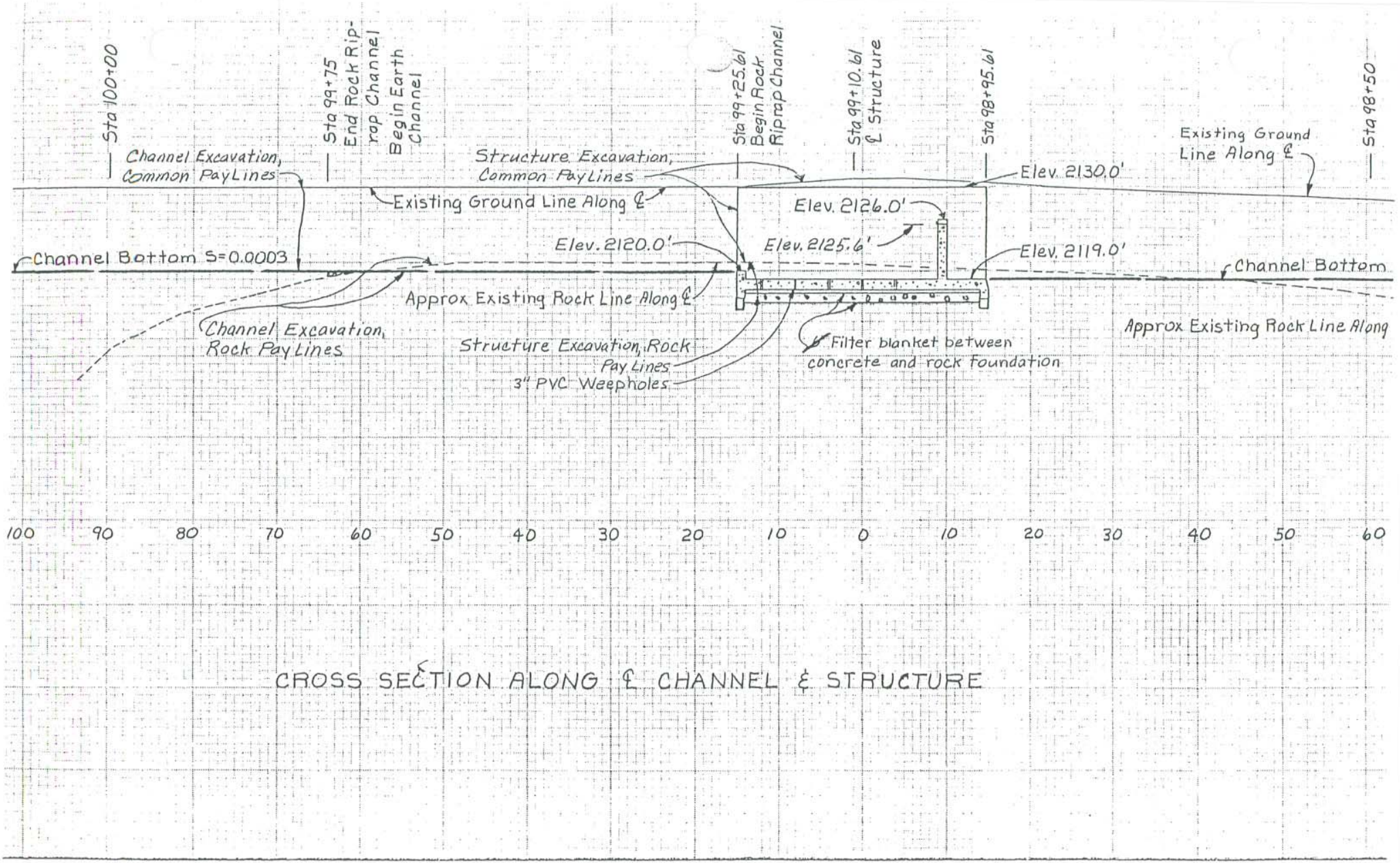
SECTION A 16|17

A-5: CHANNEL WATER CONTROL STRUCTURE LONG. SECTION



A-5: FLOODWATER BARRIER
TYPICAL SECTION

A-5: OUTLET STRUCTURE
PLAN VIEW



CROSS SECTION ALONG ℄ CHANNEL & STRUCTURE

A-5: OUTLET STRUCTURE
LONG. SECTION

A-6: HYPOLIMNETIC AERATOR FACILITY PLANS

BRIEF DESCRIPTION OF OXYGENATION SYSTEM

The Newman Lake Oxygenation System has been designed to supply the hypolimnion with sufficient oxygen to raise the current water quality from its 0 - 1 mg/l O² content during the summer months to a 4-6 mg/l O² ratio.

Calculation made by Dr. Barry Moore and Dr. Wm. Funk of the Washington Water Research Department and verified by Kenneth Ashley, Limnologist, established a peak daily hypolimentic oxygen demand of 912 kg/day (Ashley Report 2-28-90, p. 9) #2008 lb./day. This requirement has been increased to 3000#/day allowing for a safety factor.

Following is the basic design data and sizing calculations of the aerator components and expected efficiencies of each component and the entire aerator and the character of the oxygenated discharge.

Design Calculations for Oxygen Cone for Newman Lake.

Dissolved Oxygen (D.O.) in Code discharge = 26 mg./l
Daily D.O. Requirement = 3000 lb/day - Maximum
Required flow through the cone to delivery 3000#/day at 26 mg/l = 21 ft³/sec.
Assume inlet velocity of cone to be 10 ft./sec.
Therefore inlet diameter = 20 inches.
Assume bottom velocity of cone = 0.3 ft./sec.
Therefore bottom cone Diameter = 9 feet
Assume a hydraulic detention time in cone = 15 sec.
Cone volume required = 315 cubic feet
Code height required = 15 feet
The cone is designed to be 100% efficient. All oxygen leaving the cone will be in suspension.
Pump Design (See performance curve in appendix "G")
21ft.³/sec = 9450 gal per minute.

The Air Sep (Model AS1000 M) has a rated output of 1500 lb. O²/day @ 85% efficiency operating at 35 p.s.i.g., 178.3 c.f.m. The manufacturers literature for an unmodified model lists the A.S.1000 as having an air consumption of 208 c.f.m. Two A.S.1000 units will be utilized to furnish the 3000 lb. of O²/day for the peak demand months, (estimated 4 months). Only one unit, 1500 lb./day, will be utilized in non-peak demand months (estimated 4 months).

The compressed air required for the O² generators will be supplied by two 50 H.P. Atlas Copco GA37-100 rotary screw compressors. Each compressor has an air delivery rating of 238 cfm at 100 p.s.i.g. An Atlas Copco Dryer, Model FD 210 with a rated capacity of 675 cfm at 50° F dew point, 477 cfm at 39° dew point will dry the air prior to entering the air receiver tank. With 2 oxygen generators and 2 compressors, the system can be operated at 100% capacity. 3000 lb. O²/day or 50% capacity without cycling the compressors. An on-off operational mode will allow any capacity from 0-100%.

The design of the system has employed the expertise of numerous experts in the respective disciplines designing their respective parts of the system. The design team participants are:

Mr. Jerry Nicholls
Spokane County Engineering Department
North 811 Jefferson
Spokane, Washington 99260
Telephone: (509) 456-3600

Dr. Wm. Funk
Dr. Barry Moore, Water Research Center
Washington State University
Pullman, Washington 99164
Telephone: (509) 335-5531

Mr. Ken Ashley, MSC
Limnologist
Environmental Engineer
Ministry of Environment - Fisheries
2204 Main Mall
University of British Columbia
Vancouver, B.C., V6T1W5
Telephone: (604) 660-1512

Dr. Greg Lawrence
University of British Columbia
Department of Civil Engineering
2324 Main Mall
Vancouver B.C. V6T 1W5
Telephone: (604) 228-2637

Dr. Richard Speece Ph.D.,P.E.
Centennial Professor of Engineering
Vanderbilt University
School of Engineering
Box 6012 Station B
Nashville, Tennessee 37235

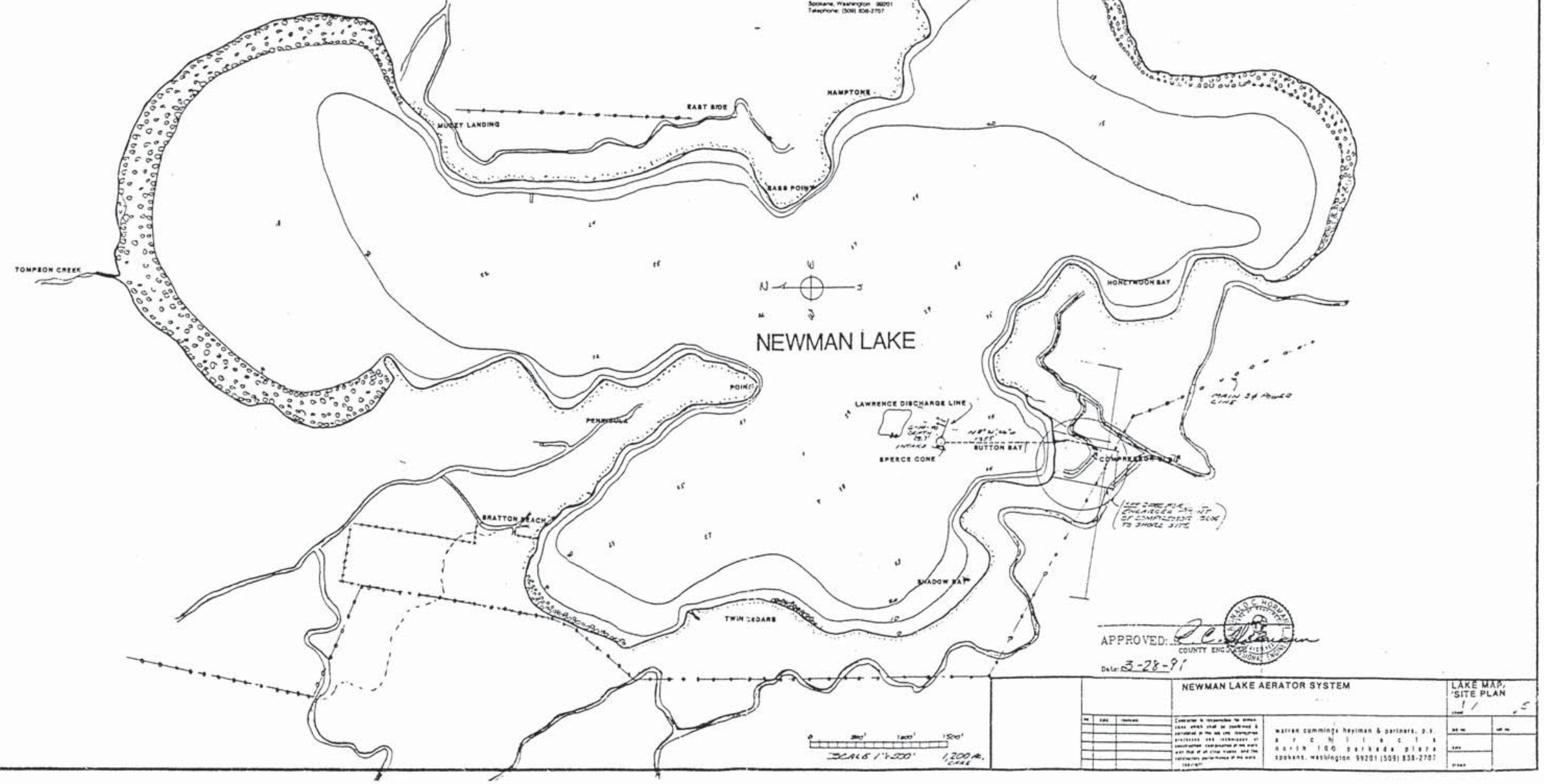
Mr. Ted Frazier
Air Sep Corp.
84 Aero Drive
Buffalo, New York 1422?
Telephone: (716) 626-4??6

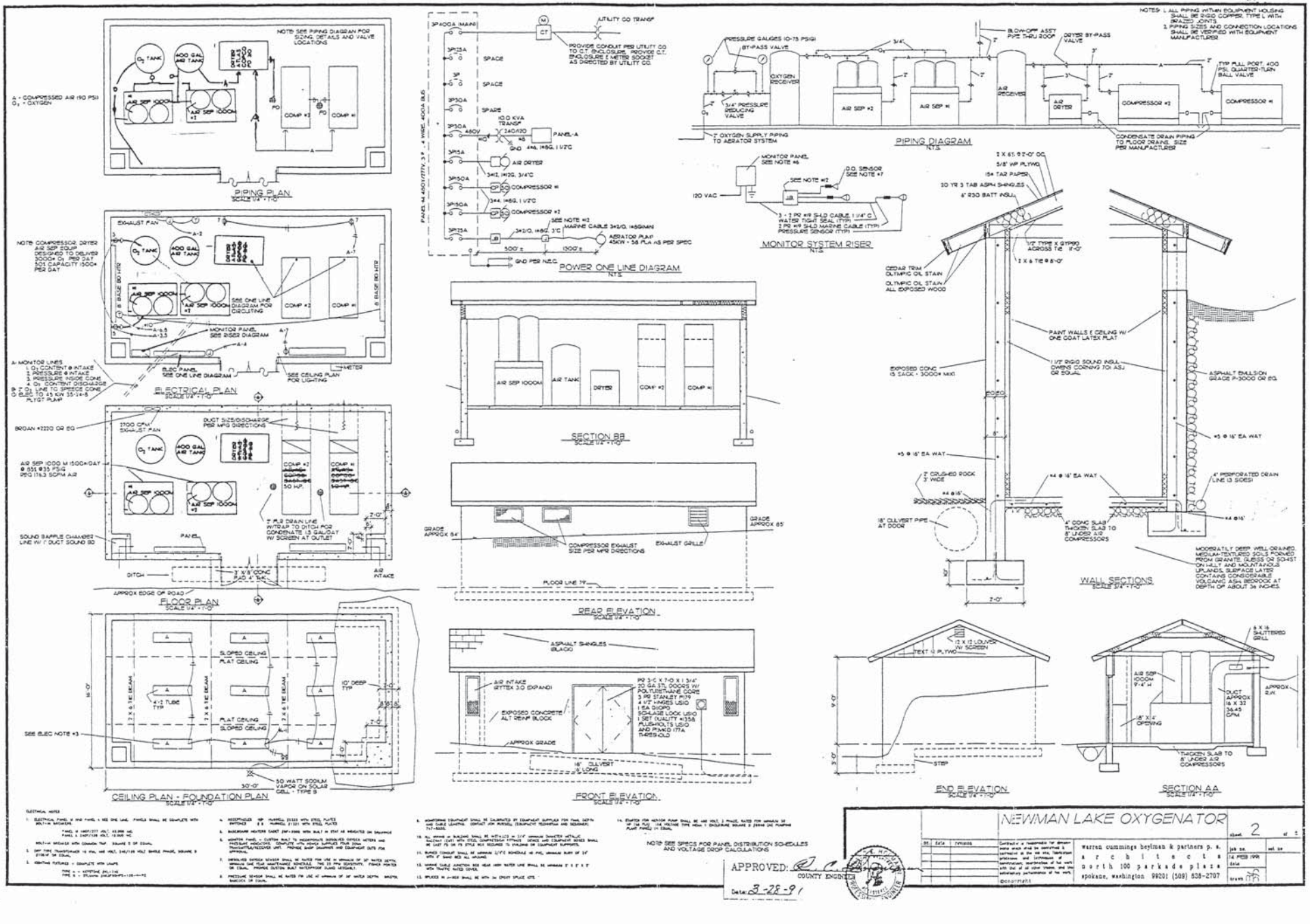
Mr. Don Evens
Doyle Engineering, Inc.
W. 926 Sprague Avenue
Spokane, Washington 99204
Telephone: (509) 747-6139

Mr. Loren Burley
Luhn Shafer Luhn Mechanical Engineers
North 216 Pacific
Spokane, Washington 99201
Telephone: (509) 747-2179

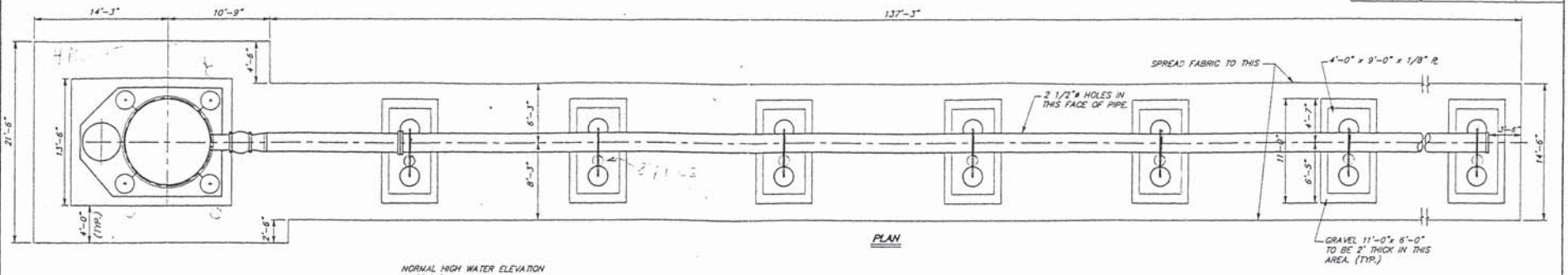
Mr. Ron England
Atlas Copco
Spokane Compressor
East 1214 Sprague Avenue
Post Office Box 3663
Spokane, Washington
Telephone: (509) 535-??71

Mr. Warren Heyman, Volunteer
Warren Cummings Heyman & Partners, Architects
N. 100 Parkade Plaza
Spokane, Washington 99201
Telephone: (509) 838-2707

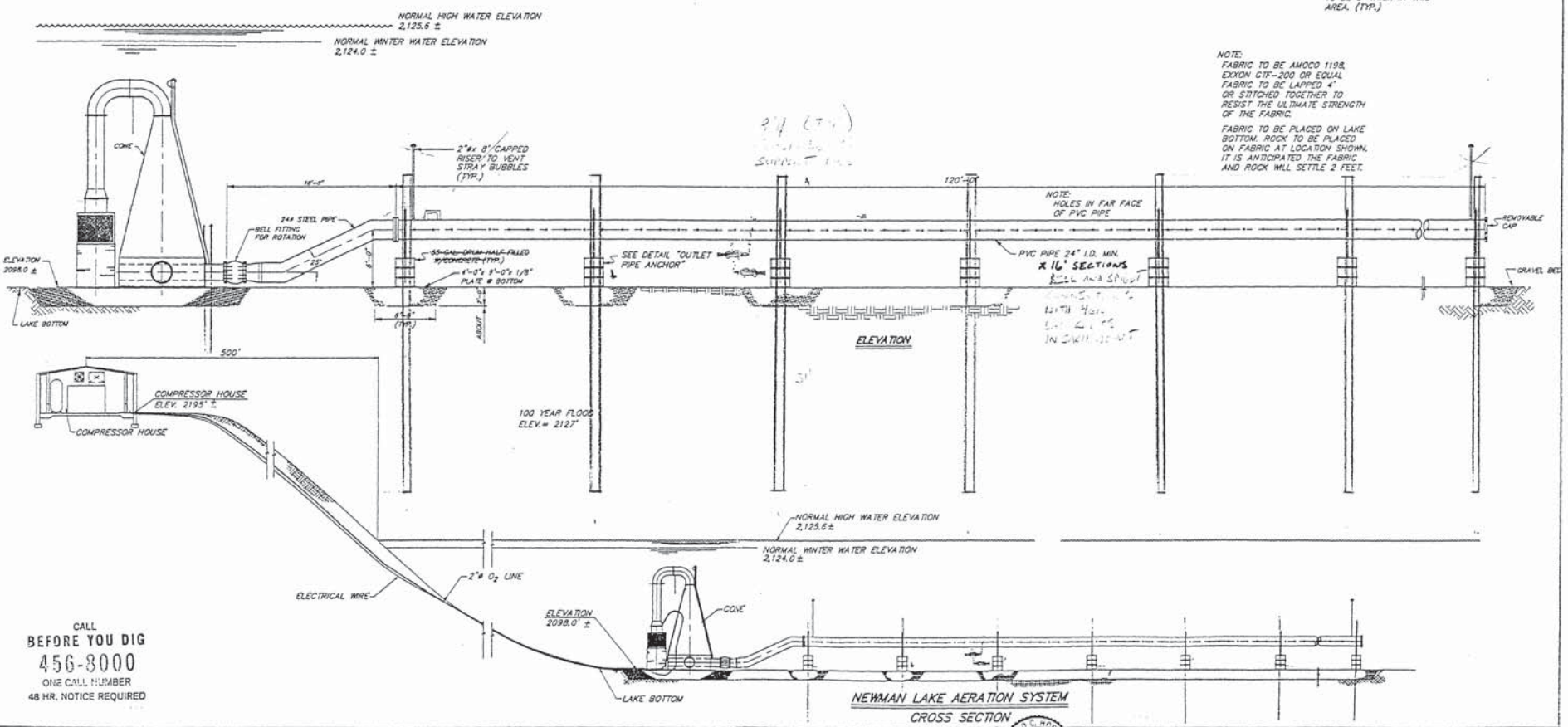



PIPING PLAN
ELECTRICAL PLAN
FLOOR PLAN
CEILING PLAN + FOUNDATION PLAN
POWER ONE LINE DIAGRAM
PIPING DIAGRAM
MONITOR SYSTEM RISER
SECTION BB
REAR ELEVATION
FRONT ELEVATION
END ELEVATION
WALL SECTIONS
SECTION AA
NEWMAN LAKE OXYGENATOR
warren cummings heylman & partners p. s.
architects
north 100 parkade plaza
spokane, washington 99201 (509) 838-2707
APPROVED:
COUNTY ENGINEER
Date: 3-28-91

REGION NO.	STATE	FED. AID PROJECT NO.	SHEET NO.
10	WASH.		OF



PLAN



NEWMAN LAKE AERATION SYSTEM

CROSS SECTION

CALL
BEFORE YOU DIG
456-8000
ONE CALL NUMBER
48 HR. NOTICE REQUIRED

No.	Date	By	Ckd.	Appr.	Revision

Drawn By: DRH	Date: 7/90	SCALE
Designed By: COMMITTEE	7/90	HORIZONTAL:
Checked By: COMMITTEE	7/90	VERTICAL:

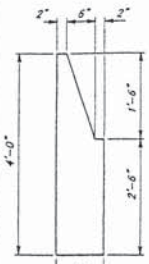
OFFICE OF
SPOKANE COUNTY ENGINEER
N. 811 JEFFERSON ST.
SPOKANE, WA. 99260
456-3600

APPROVED: COUNTY ENGINEER
Date: 3-28-91

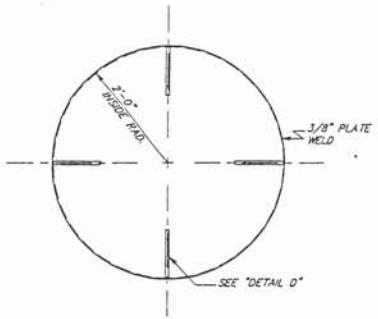
NEWMAN LAKE OXYGENATOR
PLAN/ELEVATION VIEW

SHEET 3 of 5

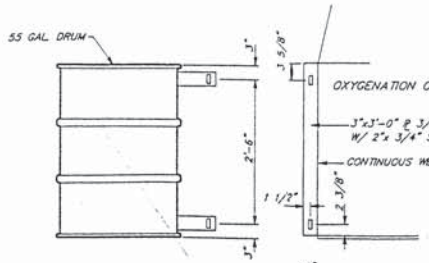
REGION NO.	STATE	FED. AID PROJECT NO.	SHEET NO.
10	WASH.		OF

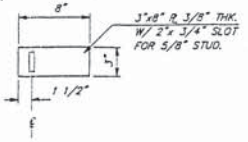


DETAIL D
3/4" PLATE



SECTION A – A



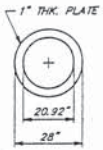


DRUM ATTACHMENT DETAIL

NOTE:
1. STRUCTURAL STEEL SHALL BE ASTM-A36, NEW AND OF DOMESTIC ORIGIN.
2. DESIGN, FABRICATION, AND ERECTION SHALL CONFORM TO THE AISC MANUAL OF STEEL CONSTRUCTION (8TH. EDITION.)
3. WELDS SHALL BE PER AWS D1.1-86 STRUCTURAL WELDING CODE-STEEL USING 70 KSI FILLER MATERIAL.
4. STRUCTURAL STEEL SHALL BE CLEANED IN ACCORDANCE WITH SSPC-SP3 AND INSIDE OF TANK SHALL BE COATED WITH ONE COAT OF DEVCON EPOXY SEALER 100. THE OUTSIDE SHALL BE SHOP COATED WITH ONE COAT OF INORGANIC ZINC PRIMER, THEN APPLY TWO COATS OF EXTERIOR PPG SEMI-GLOSS ENAMEL OR EQUAL.

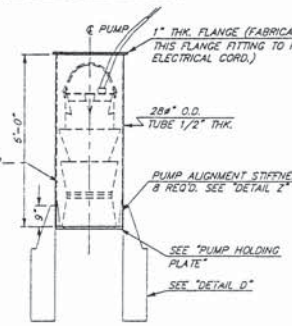
PARTIAL BILL OF MATERIAL

MARK	REQ'D.	DESCRIPTION	REMARKS
PL1	1	R 5/8"x 9'-8" DIA.	D-512060
PL2	1	R 1/4"x 3'-0"x 28'-3" LG.	D-512060
PL3	1	R 1/4"x 15'-0"x 28'-3" LG.	D-512060
PL4	1	R 1/8"x 9'-0"x 12'-0" LG.	D-512060
PL5	4	R 1/8"x 4'-6"x 12'-0" LG.	D-512060
PL6	1	R 5/8"x 2'-4" DIA.	D-512061
PL7	1	R 3/8"x 7'-0" DIA. W/ SKIRT & TUBES	
PL8	1	R 3/8"x 2'-4" DIA.	

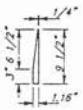


PUMP HOLDING PLATE

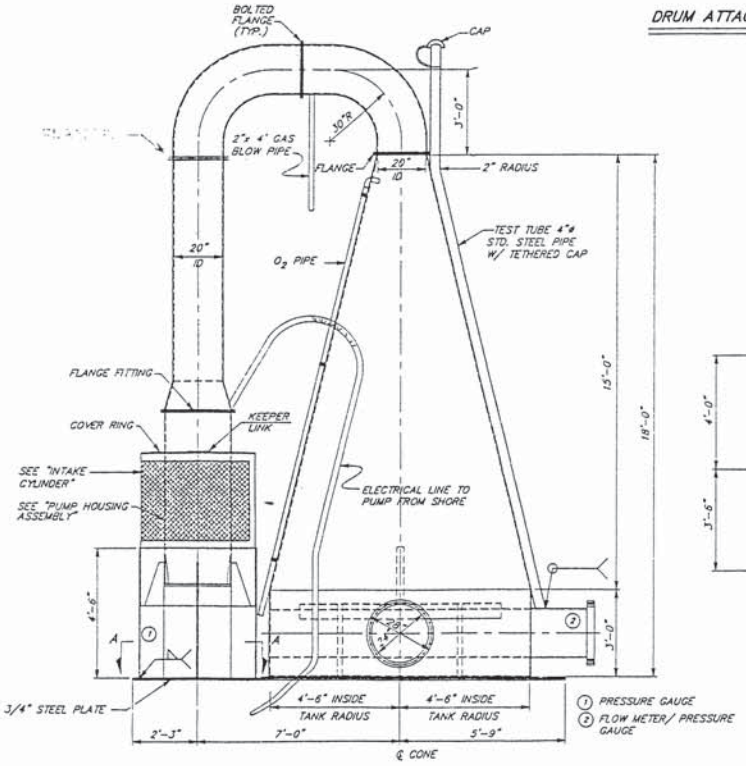
FLYGT PUMP
MOTOR.....35-24-8
KW.....45
DRIVE UNIT.....680
TOTAL HEIGHT.....68.5"
WEIGHT.....1720 LB.



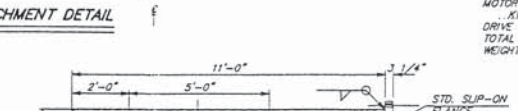
PUMP DISCHARGE TUBE



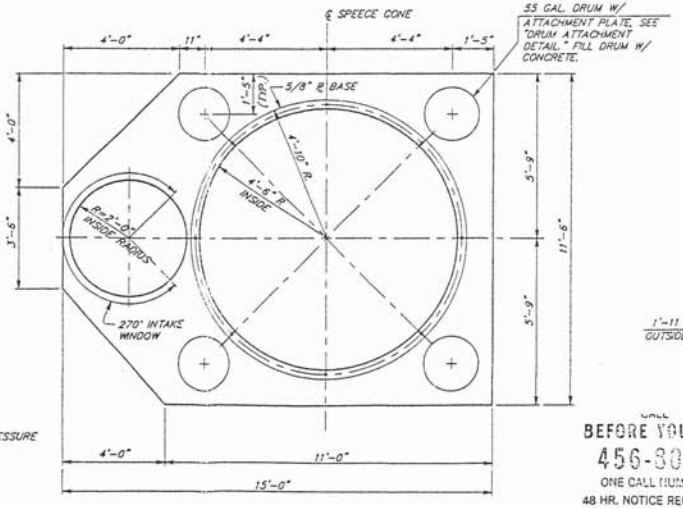
DETAIL Z
3/4" PLATE



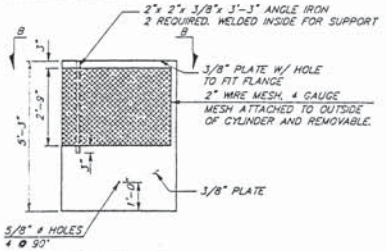
OXYGENATION CONE ELEV.



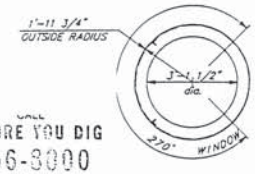
PIPE – P1



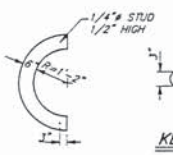
PLAN VIEW



INTAKE CYLINDER



VIEW B-B



COVER RING
2 REQ'D.

KEEPER LINK
2 REQ'D.

CALL BEFORE YOU DIG
456-3000
ONE CALL NUMBER
48 HR. NOTICE REQUIRED

No.	Date	By	Ckd.	Appr.	Revision

Drawn By: DRH	Date: 7/90	SCALE
Designed By: COMMITTEE	7/90	HORIZONTAL:
Checked By: COMMITTEE	7/90	VERTICAL:

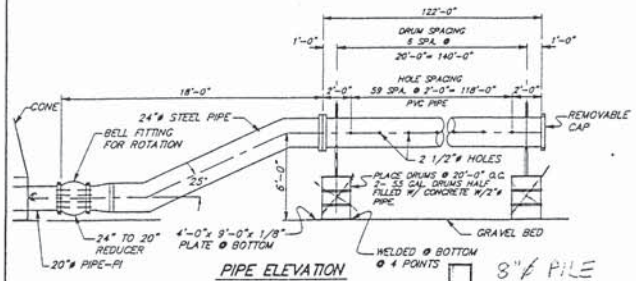
OFFICE OF
SPOKANE COUNTY ENGINEER
N. 811 JEFFERSON ST.
SPOKANE, WA. 99260
456-3600

APPROVED: COUNTY ENGINEER
Date: 3-27-91

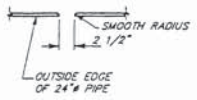
NEWMAN LAKE OXYGENATOR
CONE ELEVATION & PUMP HOUSING DETAILS

SHEET 4 of 5

REGION NO.	STATE	FED. AID PROJECT NO.	SHEET NO.
10	WASH.		OF

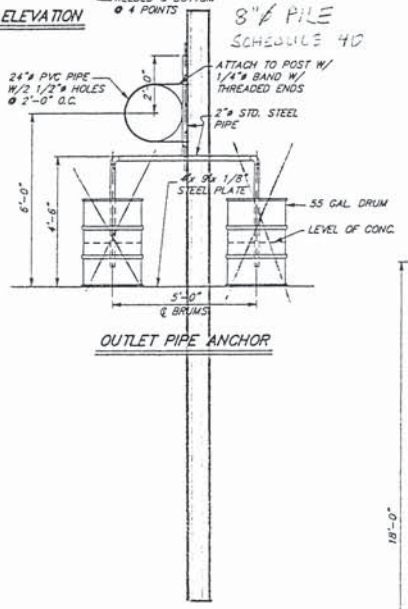


PIPE ELEVATION

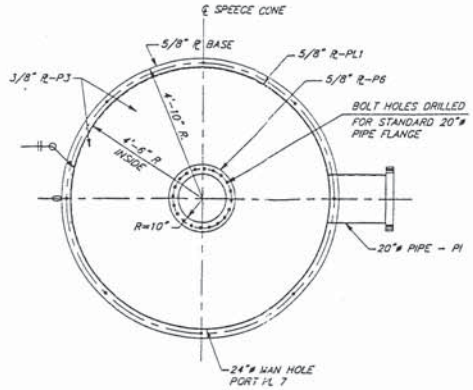


OUTLET HOLE DETAIL

8"ø PIPE
SCHEDULE 40



OUTLET PIPE ANCHOR



SPEECE CONE PLAN

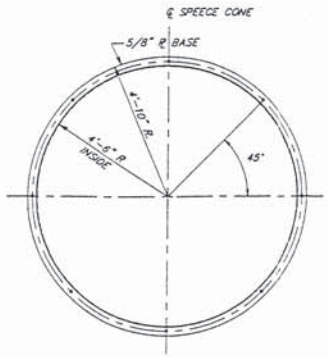


PLATE - PL1

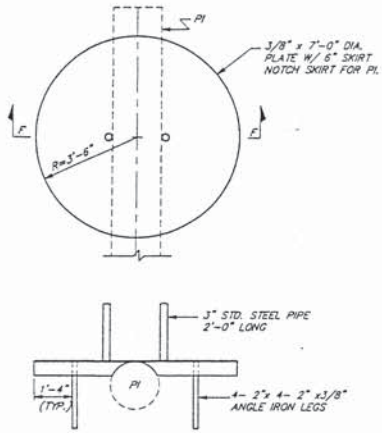
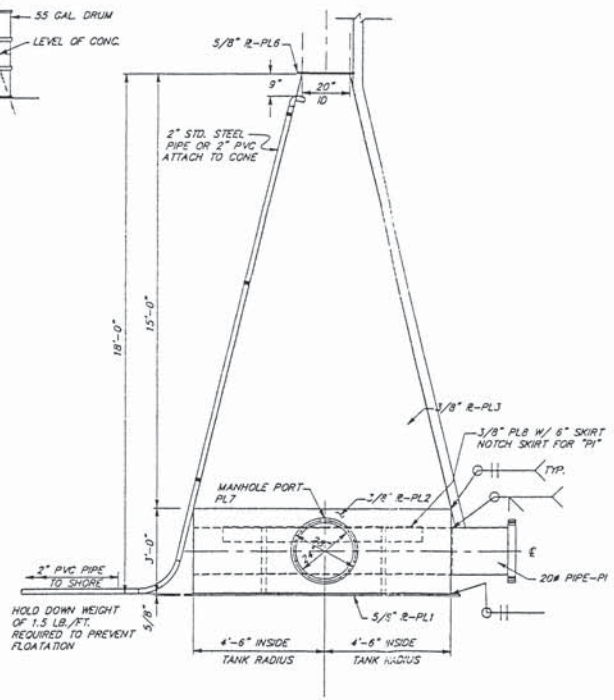


PLATE - PL8
SECTION F - F



OXYGENATION CONE ELEV.

CALL
BEFORE YOU DIG
456-8000
ONE CALL NUMBER
48 HR. NOTICE REQUIRED

No.	Date	By	Ckd.	Appr.	Revision

Drawn By: DRH	Date: 7/90	
Designed By: COMMITTEE	7/90	
Checked By: COMMITTEE	7/90	

SCALE
HORIZONTAL:
VERTICAL:

OFFICE OF
SPOKANE COUNTY ENGINEER
N. 811 JEFFERSON ST.
SPOKANE, WA. 99260
456-3600

APPROVED: [signature] COUNTY ENGINEER
Date: 3-29-91

RONALD C. NORMAN — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

NEWMAN LAKE OXYGENATOR
CONE LAYOUT

SHEET
5 of 5

APPENDIX B: DISTRICT RESOLUTIONS AND AGREEMENTS

B-1: RESOLUTION FORMING DISTRICT

B-2: SCS AGREEMENTS FOR FACILITY OPERATION AND MAINTENANCE

B-3: PUBLIC NOTICE TO PROPERTY OWNERS ADJACENT TO OUTLET CHANNEL

B-4: NRCS SNOTEL SITE AGREEMENT

B-5: RESOLUTION FOR IMPLEMENTATION OF THE COMPREHENSIVE STORMWATER PLAN

B-1: RESOLUTION FORMING DISTRICT

BEFORE THE BOARD OF COUNTY COMMISSIONERS OF SPOKANE COUNTY, WASHINGTON

RESOLUTION NO. 68- 507

IN THE MATTER OF NEWMAN LAKE FLOOD CONTROL ZONE FCZ NO. 1	)))	RESOLUTION CREATING THE ZONE DISTRICT

WHEREAS a petition of electors has been filed with the County Auditor praying the Board of County Commissioners to create a flood control zone in the Newman Lake watershed as provided by R.C.W. 86.15, and

WHEREAS the County Auditor has checked said petition and has certified the same to the Board as being a valid petition in accordance with the law, and

WHEREAS the Board of County Commissioners by Resolution No. 67-291 passed and adopted on the 1st day of June,1967 did set a time and place for a public hearing to consider the proposed creation of a Flood Control Zone District for the purposes of improving the outlet and outlet control structures of the Newman Lake watershed in order to minimize flood damage and give more positive control of the run-off waters from within the watershed, and

WHEREAS said public hearing was convened at 11:00 A.M. the 27th day of June,1967 and the Board did then and there take all testimony offered both pro and con in connection with said matter and the Board did continue said hearing, and

WHEREAS said hearing on the proposed creation of a Newman Lake Flood Control Zone District was reconvened at 10:00 A.M. the 29th day of October,1968 and again the Board gave all interested parties an opportunity to give testimony in regard to the matter, and

WHEREAS notice of hearing and public hearing having been provided in accordance with law and all interested parties having been permitted to be heard and the Board having determined the creation of the Newman Lake Flood Control Zone to be in the best public interest.

THEREFORE BE IT RESOLVED By the Board of County Commissioners of Spokane County, Washington that the intention of Resolution No. 67-291 passed and adopted by the Board on the 1st day of June,1967 is hereby confirmed and the Newman Lake Flood Control Zone District, FCZ No. 1 is hereby created, the boundary of said Zone District being more particularly described as follows:

Beginning at the SW corner of Section 22, Township 26 North, Range 45, E.W.M., thence northerly along the West line of said Section 22 and Section 15 to the Northwest corner of Section 15, Township 26 North, Range 45, E.W.M., thence westerly along the south line of Sections 9 & 8, Township 26 North, Range 45, E.W.M., to the Southwest corner of said Section 8; thence North along the West line of Sections 8 & 5, Township 26 North, Range 45, E.W.M., and the West line of Sections 32 and 29, Township 27 North, Range 45, E.W.M., to the Northwest Quarter corner of said Section 29; thence easterly along the North line of said Section 29, to the South Quarter Corner of Section 20, Township 27 North, Range 45, E.W.M.; thence north along the center line of said section 20 to the North Quarter Corner of said Section 20; thence East along the North line of said Section 20 to the Southwest Corner of Section 16, Township 27 North, Range 45 E.W.M.; thence North along the West line of said Section 16 to the Northwest Corner thereof; thence East along the North line of said Section 16 to the Southwest Corner of Section 10, Township 27 North, Range 45, E.W.M.; thence North along the West line of Sections 10 & 3, Township 27 North, Range 45, E.W.M., to the Northwest Corner of said Section 3; thence East along the North line of said Section 3 to the Northeast Corner thereof; thence North along the West line of Section 35, Township 28 North, Range 45, E.W.M., to the Northwest corner of said section; thence East along the North line of said Section 35, to the Northeast Corner thereof; thence South along the East line of said Section 35, to the Southeast corner thereof; thence East along the North line of Section 1, Township 27 North, Range 45, E.W.M., to the Northeast corner thereof; thence

thence South along the East line of Section 1 and Section 12, Township 27 North, Range 45, E.W.M., to the southeast corner of said Section 12; thence West along the South line of Said Section 12 to the southwest corner thereof; thence South along the East line of Sections 14, 23 and 26, Township 27 North, Range 45, E.W.M., to the southeast corner of said Section 26, Township 27 North, Range 45, E.W.M.; thence East along the North line of Section 36, Township 27 North, Range 45, E.W.M., to the North Quarter corner of said Section 36; thence South along the center line of said Section 36 and Section 1, Township 26 North, Range 45, E.W.M., to the South Quarter corner of said Section 1; thence East along the South line of said Section 1, to the Southeast Quarter corner thereof; thence South along the East line of Sections 12, 13 and 24 to the North right of way line of Trent Road Extension; thence Southwest along the North right of way line of said Trent Road to the South line of Section 24, Township 26 North, Range 45 E.W.M.; thece along the South line of Sections 24, 23 and 22, Township 26 North, Range 45, E.W.M., to the Southwest corner of said Section 22 ~~e~~ the Point of Beginning.

BE IT FURTHER RESOLVED that such action to create said Newman Lake Flood Control be and is subject to review by the Spokane County Boundary Review Commission, and

BE IT FURTHER RESOLVED that administration of the affairs of the Zone shall be the County Engineer.

PASSED AND ADOPTED By the Board of County Commissioners of Spokane County, Washington this 29th day of October,1968.

BOARD OF COUNTY COMMISSIONERS
OF SPOKANE COUNTY, WASHINGTON

BOARD OF COUNTY COMMISSIONERS
OF SPOKANE COUNTY, WASHINGTON
HOWARD T. BALL
W. O. ALLEN
JACK GERAGHTY

attest; VERNON W. OHLAND
CLERK OF THE BOARD

BY Nettie E. Motley
DEPUTY

B-2: SCS AGREEMENTS FOR FACILITY OPERATION AND MAINTENANCE

BEFORE THE BOARD OF COUNTY COMMISSIONERS OF SPOKANE COUNTY, WASHINGTON

RESOLUTION NO. 94 0329

IN THE MATTER OF ADOPTING A)
REVISED NEWMAN LAKE OPERATION) RESOLUTION
AND MAINTENANCE PLAN AGREEMENT)
WITH THE SOIL CONSERVATION SERVICE)

WHEREAS, the Newman Lake Flood Control Zone District is responsible for monitoring and controlling the level of Newman Lake including runoff from the surrounding watershed; and

WHEREAS, the Spokane County Board of Commissioners, acting on behalf of the Newman Lake Flood Control Zone District, has an agreement with the United States Department of Agriculture Soil Conservation Service entitled "Operations and Maintenance Agreement and Operations and Maintenance Plan, Newman Lake Watershed, dated March 1, 1981; and

WHEREAS, the Spokane County Engineer and the Newman Lake Flood Control Zone District Advisory Board recommend that the agreement be revised to clarify operation and maintenance activities for the Newman Lake outlet channel, the channel water control structure and the water disposal area; and

WHEREAS, the Spokane County Board of Commissioners held a hearing to receive public testimony regarding this matter.

THEREFORE, BE IT RESOLVED by the Board of County Commissioners of Spokane County, Washington that the revised agreement is approved.

PASSED AND ADOPTED by the Board of County Commissioners of Spokane County, Washington, this 8th day of March, 1994.

BOARD OF COUNTY COMMISSIONERS
OF SPOKANE COUNTY, WASHINGTON

Steven Hasson, Chair

D. E. Chilberg

94 0329

OPERATION AND MAINTENANCE AGREEMENT

THIS AGREEMENT made on March 8, 1994, is between the Soil Conservation Service, United States Department of Agriculture, hereinafter referred to as the Service, and the following organization(s), hereinafter referred to as the Sponsor(s):

Board of County Commissioners of Spokane County for Newman Lake Flood Control Zone District

The Sponsor(s) and the Service agree to carry out the terms of this agreement for the operation and maintenance of the project measures in the State of Washington. The project measures covered by this agreement are identified as follows:

1) Outlet channel from CL channel station 122+00 to CL channel station 297+68;
2) Channel water control structure; and
3) Sink area improvement.

I. OPERATIONS

A. The Sponsor(s) will be responsible for operating the measures without cost to the Service as follows:

1. In compliance with applicable Federal, State and local laws;

2. The Sponsor(s) shall use its best efforts to comply with the conditions set out in the instruments by which rights were acquired to install, operate, and maintain the measures but it is recognized that the Sponsor(s) cannot guarantee its operation will at all times provide adequate drainage or subirrigation of farm soils when it is necessary to discharge large volumes of water from the lake or when it is necessary to hold water in the lake;

3. In a manner that will protect the environment and permit the measures to serve the purpose for which installed as set forth in the program agreement; and

4. In keeping with the requirements to provide inspection, operation, and maintenance reports within the time frame provided in the attached plan.

B. Admission or users fees shall be charged only as necessary to produce revenues required by the Sponsor(s) to amortize its share of installation costs for that portion of the measures pertaining to recreation or fish and wildlife and to provide adequate inspection, operation, maintenance, and replacement of the same.

C. In a recreation or fish and wildlife measure the Sponsor(s) may dispense such services and commodities, or arrange with private concessionaires for the dispensing of such services and commodities, which will contribute to the full use and enjoyment of the measures by the public at prices which are reasonable and compatible with prices for similar services and commodities within the area served by the measures.

D. The Service will, upon request of the Sponsor(s) and to the extent that its resources permit, provide consultative assistance in the operation of the structural measures.

II. MAINTENANCE

A. The Sponsor(s) will:

1. Be responsible for and promptly perform or have performed without cost to the Service all maintenance of the measures determined by either the Sponsor(s) or the Service to be needed.

2. Obtain prior Service approval of all plans, designs and specifications for maintenance work affecting the performance of the system as designed by the Service except when necessary to act more expeditiously to minimize risks of flooding or in other emergency.

B. The Service will upon requests of the Sponsor(s) and to the extent that its resources will permit, provide consultative assistance in the maintenance of the measures.

III. REPLACEMENT

A. The Sponsor(s) will be responsible for the replacement of parts or portions of the measures which have a physical life of less duration than the evaluated life of the measures.

B. The Service will, upon request of the Sponsor(s), provide consultative assistance in the replacement of measures' parts or portions.

IV. PLAN OF OPERATIONS AND MAINTENANCE

The Service and the Sponsor(s) will prepare a detailed plan of operation and maintenance for each measure covered by this agreement. More than one measure may be included in a single plan provided that the measures are sufficiently similar to warrant such action. Each such plan shall be attached to and become a part of this agreement.

V. INSPECTIONS AND REPORTS

A. The Sponsor(s) will inspect the measures at least annually and after each major storm or occurrence of any unusual condition that might adversely affect the measures.

B. The Service or federal land administering agency may inspect the measures at any reasonable time during the period covered by this agreement. At the discretion of the State Conservationist, Service personnel may assist the Sponsor(s) in their inspections.

C. A written report will be made of each inspection. A copy of each report will be provided by the inspecting party to the other party within ten days of the date on which the inspection was made. The report will describe the conditions found and will list any corrective action needed with a time frame to complete each action.

VI. TIME OF RESPONSIBILITY

The Sponsor(s)' responsibility for operation and maintenance begins when a part of or all of the work of installing a measure is completed and accepted or is determined complete by the Service. This responsibility shall continue until the expiration of the evaluated life of all the installed project measures. This does not relieve the Sponsor(s)' liability which continues throughout the life of the measure or until the measure is modified to remove potential loss of life or property.

VII. RECORDS

The Sponsor will maintain in a centralized location a record of all inspections and significant actions taken, cost of performance, and completion date with respect to operation, maintenance, and replacement. The Service may inspect these records at any reasonable time during the term of this agreement.

VIII. GENERAL

A. The Sponsor(s) will:

1. Prohibit the installation of any structure or facilities that will interfere with the operation or maintenance of the project measures.

2. Obtain prior Service approval of the plans and specifications for any alteration or improvement to the structural measures that materially effect the performance of the system as designed by the Service.

3. Obtain prior Service approval of any agreement to be entered into with other parties for the operation or maintenance of all or any part of the project measures and provide the Service with a copy of the agreement after it has been signed by the Sponsor(s) and the other party.

B. Service personnel will be provided the right of free access to the project measures at any reasonable time for the purpose of carrying out the terms of this agreement.

C. The responsibilities of the Sponsor(s) under this agreement are effective simultaneously with the acceptance of the project measures in whole or in part.

D. Comply with the attached PROPERTY MANAGEMENT STANDARDS.

Name of Sponsor: Spokane County for the Newman Lake Flood Control District

By: X _____ Title: Chairman Board of County Commrs

This action was authorized at an official meeting of the Sponsor named immediately above on March 8, 1993 at 4.

Attest: _____ Title: Clerk

Name of Sponsor: _____

By: _____ Title: _____

This action was authorized at an official meeting of the Sponsor named immediately above on _____, 1993 at _____.

Attest: _____ Title: _____

Soil Conservation Service, United States Department of Agriculture

By: _____ Title: State Conservationist

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OPERATIONS AND MAINTENANCE PLAN
NEWMAN LAKE WATERSHED

GENERAL

This operation and maintenance plan is written to cover the following segments of the Newman Lake Watershed project construction program:

1. Outlet channel from CL channel station 122+00 to CL Channel station 297+68;
2. Channel water control structure; and
3. Sink area improvement.

This Agreement is not intended to create or be used to impose any liability upon the Sponsor in carrying out the terms of this Agreement.

FUNDING

Operations and maintenance of the above segments will be by Spokane County as acting for the Newman Lake Flood Control Zone District. They have been designated to perform all the required tasks and duties necessary for operation and maintenance. Monies for operations and maintenance will be as specified by RCW 86.15. The annual budget for operations and maintenance of this segment is estimated at $10,000.00 per year. A contingency fund will be set aside to meet emergency or unusual expenditures.

OPERATIONS PROGRAM

The following items comprise the operation program for this segment of the Newman Lake Watershed project which the Spokane

County, acting for Newman Lake Flood Control Zone District, will perform:

1. Operate the gates and other features of the channel water control structure to allow passage of large volumes of water down the outlet channel without any restriction to flow. The operation of the gates and other features of the channel water control structure shall generally follow the Watershed Work Plan, except when it is necessary to allow large volumes of water out of the lake through the outlet channel. The Sponsor will use its best efforts to coordinate the release of large volumes of water from the lake through the outlet channel in an effort to provide drainage or subirrigation of adjacent farm properties. The Sponsor, however, assumes no responsibility, nor does the Sponsor guarantee, that drainage of adjacent farmlands or subirrigation will always be possible given the unpredictable weather patterns, excessive runoff, storms, and other unpredictable events occurring in the watershed.

2. The radial gate of the channel water control structure shall be operated in a manner to allow passage of large volumes of water down the outlet channel, and when possible, to assist drainage of adjacent farmlands, and to provide subirrigation to reduce the possibility of subsidence of adjacent farm soils. The radial gate may be closed at appropriate times for reasonable purposes,

including but not limited to maintenance and other similar circumstances.

3. The weir gate of the channel water control structure shall be operated for controlling the upstream water level in relation to the normal flow fluctuation occurring in the channel. The upstream water level should be maintained at the highest water level that is consistent with field drainage requirements and expected channel flows. Under normal circumstances the water level may be controlled from elevation 2119.8 feet to elevation 2122.8 feet.

4. Prevent unauthorized operation of the lake regulating structure gates.

5. Operate the lake regulating structure floodwater barrier and outlet channel in such a manner as to avoid threat or hazards to public health, safety and property.

6. File a notice to the public with the Spokane County Auditor by December 31, 1994 for each parcel adjacent to the outlet channel stating that the landowners are responsible for coordinating their farming schedules with the District's operations and that the District cannot guarantee that at times large volumes of water will not need to be discharged from the lake that may result in flooding, lack of adequate drainage or excessive subirrigation of soils in the lands adjacent to the lake, the floodwater barrier, the outlet channel and the sump.

MAINTENANCE PROGRAM

Spokane County, acting for the Newman Lake Flood Control Zone District, will establish a maintenance program for Newman Lake Watershed project works of improvement included in this segment. The overall segment shall be maintained in a prompt, orderly, regular fashion so that the works of improvement shall continue to function in the same manner as at completion of the construction. The following highlights specific items needing annual maintenance attention:

1. Vegetation:
    a. Reseed, resod, and fertilize areas of poor stand or areas destroyed by erosion. If necessary, restore eroded areas before reseeding.
    b. Cut or spray with approved herbicide woody vegetation and noxious weeds. Observe local ordinances regarding spraying.
    c. Fertilize vegetation as required to maintain a vigorous stand.
    d. Mow vegetation along outlet channel if removal of vegetation is deemed necessary.
2. Outlet Channel:
    a. Remove sediment bars and properly dispose of them outside the channel perimeter.
    b. Remove and properly dispose of debris. Repair erosion damage at structure.
    c. Replace, reinforce or extend riprap where needed.

d. Keep access for maintenance and maintain travelways in usable condition.

e. Rehabilitate damaged pipe inlets from field or side channels within the flood control district property. Replace eroded soil adjacent to pipes or structures within the flood control district property.

f. Any repair work necessary on utilities extending through the channel section shall be carried out to restore disturbed areas to original construction requirements.

3. Channel Water Control Structure:

a. Keep stilling basin free of soil or debris.

b. Restore eroded or damaged earth material, rock riprap or crushed rock surfacing around the structure.

c. Restore concrete that was deteriorated.

d. Maintain in proper working order all gates and other metal works. Promptly remove debris which may hamper their function.

e. Maintain fences in good condition.

f. Repaint, as needed, all surfaces requiring protection by painting and/or galvanizing.

4. Sink Area:

a. Monitor annually the amount of siltation occurring onto the exposed gravelly infiltration areas. If any appreciable siltation is noted from monitoring,

a program to remove and dispose of the silt shall be initiated.

b. Remove any restrictions as required to flow spreading within the sink disposal area.

c. Review the dike and existing overflow spillway annually for structural integrity of the earth fill, including the vegetative cover. If discrepancies are noted, they shall be repaired promptly.

d. Any repair work necessary on utilities extending through the dike shall be carried out to restore disturbed areas to original construction requirements.

PERMITS AND REGULATIONS

All operations and maintenance work shall be performed in accordance with federal, state, county and/or local laws, requirements and ordinances.

INSPECTIONS

A timely inspection system will be established by Spokane County, acting for the Newman Lake Flood Control Zone District, for the works of improvement included in this segment. The inspection shall consist of a field review by one or more representatives of the Newman Lake Flood Control Zone District. The Soil Conservation Service will assist the district in making this inspection for the first three (3) years after completion of construction. After each inspection a report will be prepared indicating, (1) findings of the inspection, (2) recommendations for

corrective action, and (3) a schedule for corrective work. A follow-up report will be prepared when corrective work is completed. A copy of these reports will be forwarded by the district to the Soil Conservation Service, Spokane County Field Office.

The first inspection shall be performed one month after completion of this project segment. After the first inspection, inspections shall be performed every three months for the first year and then annually thereafter. The annual inspection shall be performed during the first week in September.

Corrective action found necessary to be performed shall be completed in a timely fashion. Additional inspections shall be made following unusually high runoff producing storms.

LIFE PLAN

This plan shall remain in effect for a period of fifty (50) years from date of this Operations and Maintenance Plan.

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OPERATION AND MAINTENANCE AGREEMENT

THIS AGREEMENT made on August 29, 1978, is between the Soil Conservation Service, United States Department of Agriculture, hereinafter referred to as the Service, and the following organization(s), hereinafter referred to as the Sponsor(s):

Board of County Commissioners of Spokane County for Newman Lake Flood Control Zone District

The Sponsor(s) and the Service agree to carry out the terms of this agreement for the operation and maintenance of the project measures in the State of Washington. The project measures covered by this agreement are identified as follows:

Newman Lake Regulating Structure - outlet channel from regulating structure to ℄ channel station 122 + 00

I. OPERATIONS

A. The Sponsor(s) will be responsible for operating the measure without cost to the Service as follows:

1. In compliance with applicable Federal, State and local laws;

2. In compliance with the conditions set out in the instruments by which rights were acquired to install, operate and maintain the measure(s);

3. In a manner that will protect the environment and permit the measure(s) to serve the purpose for which installed as set forth in the program agreement;

4. In keeping with the requirements to provide inspection, operation and maintenance reports within the time frame provided in the attached plan;

B. Admission or users fees shall be charged only as necessary to produce revenues required by the Sponsor(s) to amortize its share of installation costs for that portion of the measures pertaining to recreation or fish and wildlife and to provide aqequate inspection, operation, maintenance and replacement of the same.

C. In a recreation or fish and wildlife measure the Sponsor(s) may dispense such services and commodities, or arrange with private concessionaires for the dispensing of such services and commodities, which will contribute to the full use and enjoyment of the measure by the public at prices which are reasonable and compatible with prices for similar services and commodities within the area served by the measure.

D. The Service will, upon request of the Sponsor(s) and to the extent that its resources permit, provide consultative assistance in the operation of the structural measures.

II. MAINTENANCE

A. The Sponsor(s) will:

1. Be responsible for and promptly perform or have performed without cost to the Service all maintenance of the measures determined by either the Sponsor(s) or the Service to be needed.

2. Obtain prior Service approval of all plans, designs and specifications for maintenance work.

B. The Service will upon request of the Sponsor(s) and to the extent that its resources will permit, provide consultative assistance in the maintenance of the measure(s).

III. REPLACEMENT

A. The Sponsor(s) will be responsible for the replacement of parts or portions of the measure(s) which has a physical life of less duration than the evaluated life of the measure(s).

B. The Service will, upon request of the Sponsor(s), provide consultative assistance in the replacement of measure parts or portions.

IV. PLAN OF OPERATIONS AND MAINTENANCE

The Service and the Sponsor(s) will prepare a detailed plan of operation and maintenance for each measure covered by this agreement. More than one measure may be included in a single plan provided that the measures are sufficiently similar to warrant such action. Each such plan shall be attached to and become a part of this agreement.

V. INSPECTIONS AND REPORTS

A. The Sponsor(s) will inspect the measures at least annually and after each major storm or occurrence of any unusual condition that might adversely affect the measure(s).

B. The Service or Federal land administering agency may inspect the measures at any reasonable time during the period covered by this agreement. At the discretion of the State Conservationist, Service personnel may assist the Sponsor(s) in their inspections.

C. A written report will be made of each inspection. A copy of each report will be provided by the inspecting party to the other party within ten days of the date on which the inspection was made. The report will describe the conditions found and list any corrective action needed with a time frame to complete each action.

VI. TIME OF RESPONSIBILITY

The Sponsor(s)' responsibility for operation and maintenance begins when a part of or all of the work of installing a measure is completed and accepted or is determined complete by the Service. This responsibility shall continue until the expiration of the evaluated life of all the installed project measures. This does not relieve the Sponsor(s)' liability which continues throughout the life of the measure or until the measure is modified to remove potential loss of life or property.

VII. RECORDS

The Sponsor will maintain in a centralized location a record of all inspections and significant actions taken, cost of performance and completion date with respect to operation, maintenance and replacement. The Service may inspect these records at any reasonable time during the term of the agreement.

VIII. GENERAL

A. The Sponsor(s) will:

1. Prohibit the installation of any structure or facilities that will interfere with the operation or maintenance of the project measures.

2. Obtain prior Service approval of the plans and specifications for any alteration or improvement to the structur measures.

3. Obtain prior Service approval of any agreement to be entered into with other parties for the operation or maintenance of all or any part of the project measures, and provide the Service with a copy of the agreement after it has been signed by the Sponsor(s) and the other party.

B. Service personnel will be provided the right of free access to the project measures at any reasonable time for the purpose of carrying out the terms of this agreement.

C. The responsibilities of the Sponsor(s) under this agreement are effective simultaneously with the acceptance of the project measures in whole or in part.

D. Comply with the attached PROPERTY MANAGEMENT STANDARDS.

Name of Sponsor: Spokane County for the Newman Lake Flood Control District

By: Harry M Lamed Title: Harry M Lamed

This action was authorized at an official meeting of the Sponsor named immediately above on 24 Aug 1978 at Spokane, Wn.

Attest: Norma L. Smith Title: Deputy Clerk

Name of Sponsor: _____

By: _____ Title: _____

This action was authorized at an official meeting of the Sponsor named immediately above on _____ at _____

Attest: _____ Title: _____

Soil Conservation Service, United States Department of Agriculture

By: Richard J. Porter, Acting Title: State Conservationist

APPROVED AS TO FORM
this 24th day of August, 1978
Deputy Prosecuting Attorney

PROPERTY MANAGEMENT STANDARDS

1. This attachment prescribes uniform standards governing the utilization and disposition of property furnished by the Soil Conservation Service or acquired in whole or in part with SCS funds. Sponsors are responsible for observing the standards set forth herein. Sponsors are authorized to use their own property management standards and procedures as long as the provisions of this attachment are included.

2. Definitions:

(a) Real property. Real property means land, including land improvements, structures and appurtenances thereto, excluding movable machinery and equipment.

(b) Personal property. Personal property of any kind except real property. It may be tangible -- having physical existence, or intangible -- having no physical existence, such as patents, inventions, and copyrights.

(c) Nonexpendable personal property. Nonexpendable personal property means tangible personal property having a useful life of more than one year and an acquisition cost of $300 or more per unit. A grantee may use its own definition of nonexpendable personal property provided that such definition would at least include all tangible personal property as defined above.

(d) Expendable personal property. Expendable personal property refers to all tangible personal property other than nonexpendable property.

(e) Excess property. Excess property means property under the control of any grantee which, as determined by the head thereof, is no longer required for its needs or discharge of its responsibilities.

(f) Acquisition cost of purchased nonexpendable personal property. Acquisition cost of an item of purchased nonexpendable personal property means the net invoice unit price of the property including the cost of modifications, attachments, accessories, or auxiliary apparatus necessary to make the property usable for the purpose for which it was acquired. Other charges such as the cost of installation, transportation, taxes, duty or protective in-transit insurance, shall be included or excluded from the unit acquisition cost in accordance with the grantee's regular accounting practices.

3. Use and Disposition of Real Property.

a. Title to real property shall vest in the sponsor subject to the condition that the sponsor shall use the real property as long as needed for the purpose for which it was acquired and in accordance with the O&M agreement.

b. The sponsor shall obtain approval by SCS for the use of the real property in other projects when the sponsor determines that the property is no longer needed for the original purposes.

c. When the real property is no longer needed as provided in a and b above, the sponsor shall request disposition instructions from SCS or its successor Federal agency.

(e) Acquisition date (or date received, if the property was furnished by SCS) and cost.

(f) Percentage (at the end of the budget year) of SCS participation in the cost of the project or program for which the property was acquired (not applicable to property furnished by SCS).

(g) Location, use and condition of the property and the date the information was reported.

(h) Unit acquisition cost.

(i) Ultimate disposition data, including date of disposal and sales price or the method used to determine current fair market value where a sponsor compensates SCS for its share.

(2) Property owned by SCS must be marked to indicate SCS ownership.

(3) A physical inventory of property shall be taken and the results reconciled with the property records at least once every two years. Any differences between quantities determined by the physical inspection and those shown in the accounting records shall be investigated to determine the causes of the difference. The sponsor shall, in connection with the inventory, verify the existence, current utilization, and continued need for the property.

(4) A control system shall be in effect to insure adequate safeguards to prevent loss, damage, or theft of the property. Any loss, damage or theft of nonexpendable property shall be investigated and fully documented; if the property was owned by SCS, the sponsor shall promptly notify SCS.

(5) Adequate maintenance procedures shall be implemented to keep the property in good condition.

(6) Where the sponsor is authorized or required to sell the property, proper sales procedures shall be established which would provide for competition to the extent practicable and result in the highest possible return.

6. Expendable personal property. Title to expendable personal property shall vest in the sponsor upon acquisition. If there is a residual inventory of such property exceeding $1,000 in total aggregate fair market value, upon termination or completion of the agreement and if the property is not needed for any other Federally sponsored project or program, the sponsor shall retain the property for use on nonfederally sponsored activities, or sell it, but must in either case, compensate SCS for its share. The amount of compensation shall be computed in the same manner as nonexpendable personal property.

7. Intangible property:

a. Inventions and patents. If any program produces patentable items, patent rights, processes, or inventions, in the course of work sponsored by SCS, such fact shall be promptly and fully reported to SCS. Unless there is a prior agreement between

the sponsor and SCS on disposition of such items, SCS shall determine whether protection on the invention or discovery shall be sought. SCS will also determine how the rights in the invention or discovery, including rights under any patent issued thereon, shall be allocated and administrated in order to protect the public interest consistent with "Government Patent Policy" (President's Memorandum for Heads of Executive Departments and Agencies, August 23, 1971, and Statement of Government Patent Policy as printed in 36 FR 16889).

b. Copyrights. Except as otherwise provided in the terms and conditions of the agreement, the author or the sponsor is free to copyright any books, publications, or other copyrightable materials developed in the course of or under an agreement, but SCS shall reserve a royalty-free nonexclusive and irrevocable right to reproduce, publish, or otherwise use, and to authorize others to use, the work for government purposes.

OPERATIONS AND MAINTENANCE PLAN
NEWMAN LAKE WATERSHED

GENERAL

This operations and maintenance plan is written to cover the following segments of the Newman Lake Watershed project construction program:

1. Lake Regulating Structure
2. Floodwater Barrier
3. Outlet channel from the lake regulating structure to ℄ channel station 122 + 00

FUNDING

Operations and maintenance of the above features will be by Spokane County as acting for the Newman Lake Flood Control Zone District. They have been designated to perform all the required tasks and duties necessary for operation and maintenance.

Moneys for operations and maintenance will be as specified by RCW8615.

The annual budget for operations and maintenance of this segment is estimated at $5,000.00 per year. A contingency fund will be set aside to meet emergency or unusual expenditures.

OPERATIONS PROGRAM

The following items comprise the operation program for this segment of the Newman Lake Watershed project which the Spokane County acting for Newman Lake Flood Control Zone District, will perform:

1. Operate the gates and other features of the lake regulating structure for releasing water from Newman Lake for providing flood control, irrigation, drainage, recreation and other benefits in accordance with the watershed work plan and legal requirements.

   The water level of Newman Lake will normally be stabilized at elevation 2125.6 feet USGS mean sea level datum.

   Each winter by January 1 the water level in Newman Lake will be lowered to

elevation 2123.6 feet. If an exceptionally heavy snow pack exists in the watershed above Newman Lake, the lake level shall be lowered an additional 1 foot to elevation 2122.6 feet by March 1. The Newman Lake water surface will be allowed to begin raising from the established minimum winter elevation on March 2.

Adjustments to the above control elevations may be made jointly by Newman Lake Flood Control Zone District and the Soil Conservation Service during abnormal years and/or after elevation of significant number of years of snow course and stream flow data indicates satisfactory passage of anticipated snow melt and spring rain may be accomplished with the proposed adjustment.

2. Prevent unauthorized operation of the lake regulating structure gates.
3. Operate the lake regulating structure floodwater barrier and outlet channel in such a manner as to avoid threat or hazards to public health safety and property.

MAINTENANCE PROGRAM

The Spokane County acting for the Newman Lake Flood Control Zone District, will establish a maintenance program for Newman Lake Watershed project works of improvement included in this segment. The overall segment shall be maintained in a prompt, orderly, regular fashion so that the works of improvement shall continue to function in the same manner as at completion of the construction. The following highlights specific items needing annual maintenance attention:

1. Vegetation

   a. Reseed, resod, and fertilize areas of poor stand or areas destroyed by erosion. If necessary, restore eroded areas before reseeding.

   b. Cut or spray with approved herbicide woody vegetation and noxious weeds. Observe local ordinances regarding spraying and do not

burn any vegetative materials along or adjacent to the floodwater barrier.

c. Fertilize vegetation as required to maintain a vigorous stand.

d. Do not allow grazing of vegetation upon or along floodwater barrier.

e. Mow vegetation along outlet channel if removal of vegetation is deemed necessary.

f. Maintain vegetation along lake side of floodwater barrier for providing wave protection. Replace vegetation as required.

2. Outlet Channel

a. Remove sediment bars and properly dispose of them outside the channel perimeter.

b. Remove and properly dispose of debris. Repair erosion damage at structure.

c. Replace, reinforce, or extend riprap where needed.

d. Keep access for maintenance and maintain travelways in usable condition.

e. Rehabilitate damaged pipe inlets from field or side channels. Replace eroded soil adjacent to pipes or structures.

3. Floodwater Barrier

a. Replace soil removed by rodents.

b. Establish a fire plan that meet with Service approvel to extinguish fires as soon as possible.

c. The floodwater barrier segments which have settled shall be restored to designed top grade and cross-section, as shown on construction drawings.

d. Prohibit vehicular, cattle, or horse traffic along floodwater barrier

except as required for maintenance purposes.

4. Lake Regulating Structure

   a. Keep stilling basin free of soil or debris.

   b. Restore eroded or damaged earth material, rock riprap or crushed rock surfacing around the structure.

   c. Restore concrete that has deteriorated.

   d. Maintain in proper working order slide gates, trash racks, log boom, and other metal works. Promptly remove ice and debris which may hamper their function.

   e. Maintain fences in good condition.

   f. Repaint, as needed, all survaces requiring protection by painting and/or galvanizing.

PERMITS AND REGULATIONS

All operations and maintenance work shall be performed in accordance with federal, state, county and/or local laws, requirements and ordinances.

INSPECTIONS

A timely inspection system will be established by Spokane County for the works of improvement included in this segment. The inspection shall consist of a field review by one or more representatives of the Newman Lake Flood Control Zone District. The SCS will assist the district in making this inspection for the first 3 years after completion of construction. After each inspection a report will be prepared indicating, (1) findings of the inspection, (2) recommendations for corrective action, and (3) a schedule for corrective work. A followup report will be prepared when corrective work is completed. A copy of these reports will be forwarded by the district to the Soil Conservation Service, Spokane County Field Office.

The first inspection shall be performed one month after completion of this

project segment. After the first inspection, they shall be performed every three months for the first year and then annually thereafter. The annual inspection shall be performed during the first week in September. Corrective action found necessary to be performed shall be completed in a timely fashion.

Additional inspections shall be made following unusually high runoff producing storms.

LIFE OF PLAN

This plan shall remain in effect for a period of 50 years from date of this O&M agreement.

The first inspection shall be performed one month after completion

79 1269

Amendment #1
Operation and Maintenance Agreement

The Operations Program section of the Operation and Maintenance Plan, Newman Lak Watershed, dated August 29, 1978, regarding (1) Lake Regulating Structure, (2) Floodwater Barrier, (3) Outlet Channel from the lake regulating structure to cen terline channel station 122 + 00 shall be amended to include Item #4:

An early warning system shall be established and be annually tested and updated to notify all residents in the area below the project which might be affected by extreme floods. It is recognized that the Flood Control zone district does not control operation of the ditch below station 122 + 00 and the sump area, at this time. Flooding caused by the lack of project improvements are not covered by this agreement. Floods caused by project improvements are covered by this agreement.

Name of Sponsor: Spokane County for the Newman Lake Flood Control Zone Distri

X By: Ray W Christensen Title: CHAIRMAN

This action was authorized at an official meeting of the Sponsor named immedia ly above on Sept. 10, 1979 at County Courthouse

Attest: Norma L Smith Title: Deputy Clerk

Name of Sponsor: _____

By: _____ Title: _____

This action was authorized at an official meeting of the Sponsor named immedia ly above on _____ at _____

Attest: _____ Title: _____

Soil Conservation Service, United States Department of Agriculture

By: Lynn A Brown Title: State Conservationist

B-3: PUBLIC NOTICE TO PROPERTY OWNERS ADJACENT TO OUTLET CHANNEL

RECEIVED
FILED OR RECORDED
REQUEST OF CO Eng
Dec 21 3 50 PM '94
WILLIAM E. [illegible]
AUDITOR
SPOKANE COUNTY, WASH.

9412210284

Authorized By Resolution No. 94 0329

VOL. 1683 PAGE 1201
INTEROFFICE

NOTICE TO THE PUBLIC

NEWMAN LAKE FLOOD CONTROL ZONE DISTRICT:

KNOW ALL MEN BY THESE PRESENTS, THAT THE BOARD OF COUNTY COMMISSIONERS OF SPOKANE COUNTY, has the care and responsibility of controlling, regulating, operating maintaining and inspecting the Newman Lake Flood Control Zone facilities and channel; and

WHEREAS, Spokane County and the Soil Conservation Service of the United States Department of Agriculture have executed an Agreement under County Resolution No. 94-0329, dated March 8, 1994 which requires Spokane County to file a Notice To The Public with the Spokane County Auditor for each parcel adjacent to the outlet channel of the Newman Lake Flood Control Zone stating the following:

[The land owners adjacent to the channel are responsible for coordinating their farming schedules with the District's operations and that the District cannot guarantee that at times large volumes of water will not need to be discharged from the lake that may result in flooding, lack of adequate drainage or excessive sub-irrigation of soils in the lands adjacent to the lake, the flood water barrier, the outlet channel and the sump.]

The above conditions apply to the following properties referenced by their Assessor Tax Parcel Numbers and legal descriptions.

56123.9036: 12-26-45 PTN OF SW1/4 LYG WLY OF MCCOY RD AND SLY OF LN DAF; BEG AT W1/4 COR TH S38DEG 48MIN 37SEC E 589.52FT TO C/L OF MCCOY RD AND TRUE POB TH W190FT TH N38DEG48MIN37SEC W TO W LN OF SEC BEING TERM OF SD LN DESC EXC S 20 FT THEREOF.

56141.9001: 14-26-45 NE1/4 OF NE1/4.

56243.9022: 24-26-45 PTN OF SW1/4 OF SW1/4 EXC PTN LYG ELY & SLY OF F OL DESC LN BEG 30' E OF SW COR OF SW1/4 & TRUE POB TH N450' TH NELY 401' TO A PT 650' N OF S LN OF SEC TH NELY 213.1' TO A PT 756.2' N OF S LN OF SEC TH NELY 244' TO A PT 877.9' N OF S LN OF SEC TH NELY 583.9' TO E LN OF SW1/4 OF SW1/4 SD PT BEING 1168.4' N OF S LN OF SEC & TERM OF SD LN.

56243.9018: 24-26-45 PTN OF SW1/4 OF SW1/4 DAF; BEG AT SW COR SEC 24 TH E 30 FT ALG S LN OF SEC TO TRUE POB TH N450FT TH NELY 401 FT TH SLY 650FT PAR TO W LN OF SEC TH WLY 350 FT ALG S LN OF SEC TO TRUE POB.

56243.9019: 24-26-45 PTN OF SW1/4 OF SW1/4 DAF; BEG AT SW COR OF SEC TH E 380 FT ALG S LN OF SEC TO TRUE POB TH N650FT PAR WITH W LN OF SEC TH NELY 213.1FT TH S756.2 FT PAR WITH W LN OF SEC TH W ON S LN OF SEC 186FT TO TRUE POB.

56243.9020: 24-26-45 PTN OF SW1/4 OF SW1/4 DAF; BEG AT SW COR OF SEC TH E ALG S LN OF SEC 566FT TO TRUE POB TH N756.8FT PAR W LN OF SEC TH NELY 244FT TH S877.9FT PAR WITH W LN OF SEC TH W213FT ON S LN OF SEC TO TRUE POB.

56243.9057: 24-26-45 PTN SW1/4 DAF; BEG 779FT E OF SW SEC COR TH E515.5FT T. N342FT TH W321FT TH S141FT TH SW TO PT 163FT N OF POB TH S TO POB.

56243.9078: 24-26-45 PTN S1/2 OF SW1/4 DAF; BEG AT NW COR OF SE1/4 OF SW1/4 TH E ALG N LN OF SD SE1/4 OF SW1/4 600FT TH S436.07FT TH S72DEG 09 MIN 34SDS W 631.36FT TH S 337.76FT TH W321FT TH S141FT TH SW TO PT 163FT N AND 779FT E OF SW SEC COR TH N714.90FT TH NE TO PT 153.36FT S OF POB TH N TO POB EXC N154.09FT OF W300FT OF SE1/4 OF SW1/4 AND EXC PTN DAF; BEG AT 153.36FT S OF NE COR OF SW 1/4 OF SW1/4 TH S327.20FT TH W153.50FT TH S68 FT TH W167.50FT TH N 211.70FT TH NE TO POB.

56243.9008: 24-26-45 S400 FT OF W778FT OF SE1/4 OF SW1/4.

56133.9073: 13-26-45 PTN OF THE SW1/4 LYG W OF DRAINAGE CANAL & N OF THE S1616FT EXC TH S165FT OF W 165FT THEROF & EXC CO RD.

56133.9010: 13-26-45 N1190FT OF S1616 FT OF SW1/4 W OF DRAINAGE CANAL & EXC CO RD.

56133.9039: 13-26-45 SW1/4 OF SW1/4 LYG E OF DRAINAGE CANAL R/W EXC E315.5FT & EXC CO RD.

56133.9011: 13-26-45 S426FT OF SW1/4 W OF DRAINAGE CANAL & EXC CO RD.

56132.9016: 13-26-45 N1/2 OF NW1/4 LYG E OF DRAINAGE CANAL R/W & W OF MCCOY RD EXC S1104'.

56132.9017: 13-26-45 N184' OF S1104' OF N1/2 OF NW1/4 LYG E OF DRAINAGE CANA R/W & W OF MCCOY RD.

56132.9018: 13-26-45 N184' OF S920' OF N1/2 OF NW1/4 LYG E OF DRAINAGE CANAL R/W & W OF MCCOY RD.

56132.9019: 13-26-45 N 180' OF S736' OF N1/2 OF NW1/4 LYG E OF DRAINAGE CANAL R/W & W OF MCCOY RD.

56132.9020: 13-26-45 N192' OF S556' OF N1/2 OF NW1/4 LYG E OF DRAINAGE CANAL R/W & W OF MCCOY RD.

56132.9021: 13-26-45 N180' OF S364' OF N1/2 OF NW1/4 LYG E OF DRAINAGE CANAL R/W & W OF MCCOY RD.

56132.9022: 13-26-45 S184' OF N1/2 OF NW1/4 LYG E OF DRAINAGE CANAL R/W & W OF MCCOY RD.

56132.9023: 13-26-45 S1/2 OF NW1/4 LYG E OF DRAINAGE CANAL R/W & W OF MCCOY RD EXC S1095'

56132.9024: 13-26-45 N235' OF S1095' OF S1/2 OF NW1/4 LYG E OF DRAINAGE CANAL R/W & W OF MCCOY RD.

56132.9025: 13-26-45 N250' OF S860' OF S1/2 OF NW1/4 LYG E OF DRAINAGE CANAL R/W & W OF MCCOY RD.

56132.9026: 13-26-45 N220' OF S610' OF S1/2 OF NW1/4 LYG E OF DRAINAGE CANAI R/W & W OF MCCOY RD.

56132.9005: 13-26-45 PTN OF W1/2 OF NW1/4 W OF DRAINAGE CANAL & EXC CO RD.

56245.9063: 24-26-45 PTN OF S1/2 DAF; BEG AT NE COR OF SE1/4 OF SW1/4 TH E430FT TH S66DEG 00MIN 07SDS W470.59FT TH S72DEG 09MIN 34SDS W723.78FT TH N436.07FT TH E686.74FT TO POB.

56245.9056: 24-26-45 PTN OF SE1/4 OF SW1/4 & SW1/4 OF SE1/4 DAF; BEG AT THE NELY COR OF SW1/4 OF SE1/4 TH S ALG ELY LN OF SD SW1/4 OF SE1/4 260.32 FT TH S68DEG 21MIN 35SDS W1431.70 FT TO A PT ON WLY LN OF SD SW1/4 OF SE 1/4 TH S108.07FT TH WLY 1291.80FT TO WLY LN OF SE1/4 OF SW1/4 TH N279.76FT TH N 72DEG 09MIN 34SDS E 1355.14 FT TO PT ON ELY LN OF SE1/4 OF SW1/4 TH N66DEG 00MIN O7SDS E470.59FT TH E900.66FT TO POB.

56245.9043: 24-26-45 PTN OF S1/2 OF S1/2 OF SEC DAF; BEG AT SW COR OF SE 1/4 OF SW1/4 TH E778FT TO TRUE POB TH N400FT TH E544.50FT TH S400FT TH W544.50FT TO POB.

56244.9050: 24-26-45 PTN OF SW1/4 OF SE1/4 DAF; BEG AT THE INTERS OF NWLY R/W LN OF TRENT RD WITH NLY LN OF S 1/2 OF SE1/4 TH S58DEG 07MIN 10SDS W ALG SD R/W LN 2198.43FT TO TRUE POB TH CONT S58DEG 07MIN 10SDS W230.07FT TO SLY LN OF SE1/4 TH W339.51FT TH N400FT TH W30.80FT TO WLY LN OF SD SW1/4 OF SE1/4 TH N108.07FT TH N68DEG 21MIN 35SDS E249.88FT TH S31DEG 52MIN 50SDS E572.80FT TO TRUE POB.

56244.9051: 24-26-45 PTN OF SW1/4 OF SE1/4 DAF; BEG AT THE INTERS OF NWLY R/W LN OF TRENT RD WITH NLY LN OF S1/2 OF SE1/4 TH S58DEG 07MIN 10SDS W ALG SD R/W LN 1792.17FT TO TRUE POB TH CONT SLY 406.26FT TH N31DEG 52MIN 50SDS W572.80FT TH N68DEG 21MIN 35SDS E412.83FT TH S31DEG 52MIN 50SDS E499.41FT TO TRUE POB.

56244.9052: 24-26-45 PTN OF SW1/4 OF SE1/4 DAF; BEG AT THE INTERS OF NWLY R/W LN OF TRENT RD WITH NLY LN OF S1/2 OF SE1/4 TH S58DEG 07MIN 10SDS W ALG SD R/W LN 1314.85FT TO TRUE POB TH CONT SLY 477.32FT TH N31DEG 52 MIN 50SDS W499.41FT TH N68DEG 21MIN 35SDS E485.05FT TH S31DEG 52MIN 50SDS E413.18FT TO TRUE POB.

56244.9053: 24-26-45 PTN OF S1/2 OF SE1/4 DAF; BEG AT THE INTERS OF NWLY R/W LN OF TRENT RD WITH NLY LN OF S1/2 OF SE1/4 TH S58DEG 07MIN 10 SDS W ALG SD R/W LN 893.98FT TO TRUE POB TH CONT SLY 420.87FT TH N31DEG 52MIN 50SDS W413.18FT TH N68DEG 21MIN 35SDS E283.94FT TO WLY LN OF SE1/4 OF SE1/4 TH N260.32FT TO N LN OF SD S1/2 OF SE1/4 TH ELY ALG SD LN 177.43FT TH S15DEG 22MIN OOSDS E508.22FT TO TRUE POB.

56244.9054: 24-26-45 PTN OF SE1/4 OF SE1/4 DAF; BEG AT THE INTERS OF NWLY R/W LN OF TRENT RD WITH NLY LN OF S1/2 OF SE1/4 TH S58DEG 07MIN 10SDS W ALG SD R/W LN 893.98FT TH N15DEG 22MIN 00SDS W 508.22 FT TO NLY LN OF SE1/4 OF SE1/4 TH E ALG NLY LN 893.98FT TO POB.

56244.9041: 24-26-45 N1/2 OF SE1/4 EXC RD S.

56135.9027: 13-26-45 N200' OF S390' OF S1/2 OF NW1/4 LYG E OF DRAINAGE CANAL R/W & N200' OF S390' OF S1/2 OF NE1/4 LYG W OF MCCOY RD.

56135.9028: 13-26-45 S190' OF S1/2 OF NW1/4 LYG E OF DRAINAGE CANAL R/W & S190' OF S1/2 OF NE1/4 LYG W OF MCCOY RD.

56135.9029: 13-26-45 N1/2 OF SW1/4 LYG E OF DRAINAGE CANAL R/W EXC S1116' & N1/2 OF SE1/4 LYG W OF MCCOY RD EXC S1115.82'.

56135.9030: 13-26-45 N186' OF S1116' OF N1/2 OF SW1/4 LYG E OF DRAINAGE CANAL R/W & N185.97' OF S1115.82 ' OF N1/2 OF SE1/4 LYG W OF MCCOY RD.

56135.9031: 13-26-45 N186' OF S930' OF N1/2 OF SW1/4 LYG E OF DRAINAGE CANAL R/W & N185.97' OF S929.85' OF N1/2 OF SE1/4 LYG W OF MCCOY RD.

56135.9032: 13-26-45 N186' OF S744' OF N1/2 OF SW1/4 LYG E OF DRAINAGE CANAL R/W & N185.97' OF S743.88' OF N1/2 OF SE1/4 LYG W OF MCCOY RD.

56135.9033: 13-26-45 N186' OF S558' OF N1/2 OF SW1/4 LYG E OF DRAINAGE CANAL R/W & N185.97' OF S557.91' OF N1/2 OF SE1/4 LYG W OF MCCOY RD.

56135.9034: 13-26-45 N186' OF S372' OF N1/2 OF SW1/4 LYG E OF DRAINAGE CANAL R/W & N185.97' OF S371.94' OF N1/2 OF SE1/4 LYG W OF MCCOY RD.

56135.9035: 13-26-45 S186' OF N1/2 OF SW1/4 LYG E OF DRAINAGE CANAL R/W & S185.97 OF N1/2 OF SE1/4 LYG W OF MCCOY RD.

56231.9063: 23-26-45 THAT PTN OF SE1/4 OF NE1/4 LYG NWLY OF NEWMAN LAKE CANAL & SELY OF STARR RD.

56234.9015: 23-26-45 PT OF SE1/4 LYG BET STARR RD 46 ON W & OTIS ORCH IRR CANAL ON E.

56111.9031: 11-26-45 NE1/4 LYG ELY OF NEWMAN LAKE SHORE RD & SLY OF THE FOLLOWING DESCRIBED LINE; BEG AT NE COR OF SD SEC; TH S 01°04'47" W ALG E LN OF SD SEC, 892.92FT TO THE T POB; TH S 73°44'48" W 394.95FT; TH N 80°24'46" W, 159.95FT; TH N69°41'54" W,194.89FT; TH N62°18'28"W, 180.29FT; TH N49°31'19"W,309.25FT; TH N53°55'30"W, 217.21FT; TH N83°58'01"W247.97FT; TH S75°21'41" W, 691.37FT TO TERMINUS OF SD LINE.

56111.9021: 11-26-45 PTN OF GOV LTS 1&2 LYG SLY & WLY OF NEWMAN LAKE DR & ELY OF LN BEG AT N1/4 COR OF SEC TH S ON N-S 1/2 SEC LN 910.7FT TH SELY TO PT ON NEWMAN LAKE DR 1274.8FT S FROM INTERSEC WITH E-W NEWMAN LAKE DR EXC NLY 30FT OF WLY 300FT OF SD PARCEL.

56114.9026: 11-26-45 PTNS OF GOV LT 3 IN SE1/4 AND E1/2 OF SE1/4 LYG NE OF NEWMAN LK DR EXC PTN DAF; BEG AT E1/4 SEC COR TH W190FT ALG N LN OF SE1/4 TH S38°48MIN 37SDS E TO E SEC LN TH N TO POB.

56115.9011: 11-26-45 PTN OF GOV L1; BEG AT INTERSEC OF S LN OF NEWMAN LAKE DR & N-S C/L OF SEC TH NELY ALG S LN OF SD RD 300FT TH SLY AT R/A 30 FT TH WLY PAR TO S LN OF SD RD TO N-S C/L OF SEC TH S ALG SD C/L TO S LN OF GOV L1 TH WLY ALG SD S LN TO ELY HIGH WATER LN OF NEWMAN LAKE TH NLY ALG SD HIGH WATER LN TO A LN EXTD SWLY FROM STA 7+57.4 ON NEWMAN LAKE DR TH NELY ALG SD EXTD LN TO NEWMAN LAKE DR TH NELY ALG SD NEWMAN LAKE DR TO POB.

56115.9022: 11-26-45 PTN OF L2 OF NE1/4 LYG WLY OF LN BEG AT N1/4 COR OF SEC TH S ALG N-S C/L OF SEC TO N LN OF GOV L2 & TRUE POB TH S32DEG 37MIN E TO W LN OF NEWMAN LAKE DR & TERM OF SD LN.

56115.9017: 11-26-45 PTN OF GOV L3 & E1/2 OF SE1/4 LYG W OF NEWMAN LAKE CANAL & GOV L4, 5&6 & SHORE LANDS ADJ TO NEWMAN LAKE CANAL.

56111.9014: 11-26-45 PTN OF GOV LOTS 1&2 OF NE1/4; BEG ON N&S CL OF SEC 910.7FT S OF N1/4 COR TH SE TO W LN OF STARR RD 1274.8FT FROM INT WITH NEWMAN LAKE SHORE RD TH S11DEG 06MIN E ALG RD 560FT TH S 63DEG 51MIN W10FT TH N32DEG 37MIN W921FT TO N&S CL OF SEC TH N ALG N&S CL TO POB.

56234.0101: LT 1,BLK1, ELLER' S AIRPARK

56234.0201: LT 1,BLK 2, ELLER' S AIRPARK

56242.9013: PTN OF NW1/4 LYG N & W OF R/W OF OTIS ORCHARDS IRRIGATION DIST 1, WHICH R/W LIES ADJ TO & WLY OF R/W OF SPOKANE CANAL.

56242.9030: PTN OF NW1/4 DAF; BEG 594.25FT E OF NW COR OF SEC TH E 316.08FT TH S 875FT TH W 467.86 FT TH N09°3O'48" E 888.08FT TO POB, EXC ROAD.

56242.9061: TR 3 OF RECORD OF SURVEY & AUDITORS NO. 8708130225 BEING A PTN OF NW1/4

This notice described herein shall continue in effect with the current owners, their heirs and assigns in perpetuity, or until such time as the Newman Lake Flood Control Zone District and/or the Board of County Commissioners of Spokane County record a notice to the public revising or eliminating these conditions.

IN WITNESS WHEREOF, said political subdivision has caused this instrument to be executed by its proper officers and its seal to be hereunto affixed this 20 day of December, 1994.

BOARD OF COUNTY COMMISSIONERS
OF SPOKANE COUNTY, WASHINGTON

Steven J. Hasson, Chairman

Patricia A. Mummey

D. E. Chilberg

ATTEST:
SEAL
WILLIAM E. DONAHUE
Clerk of the Board

By
Deputy Clerk

STATE OF WASHINGTON)
COUNTY OF SPOKANE) ss

I certify that I know or have satisfactory evidence that STEVEN J. HASSON, PATRICIA A. MUMMEY and D. E. CHILBERG signed this instrument, on oath stated that they are authorized to execute the instrument and acknowledged it as the Members of the Board of County Commissioners of Spokane County, to be the free and voluntary act of said political subdivision, for the uses and purposes mentioned in the instrument.

Dated this 20 day of December, 1994.

Notary Public in and for the
State of Washington, residing at Spokane
My appointment expires: 6-22-98

rofway\sherm\newmano.tic\km

B-4: NRCS SNOTEL SITE AGREEMENT

91 0284

WORKING AGREEMENT FOR
SNOW SURVEYS

Between

Spokane County

and the

Soil Conservation Service
United States Department of Agriculture

This agreement is made on this 26 day of Feb., 1991, between Spokane County (the "Participant") and the Soil Conservation Service of the United States Department of Agriculture ("SCS").

Purpose:

The participant needs snowpack and related climatological information from Quartz Mountain to effectively manage Newman Lake Reservoir. While certain funds are available, economy can be realized if the data were collected through the existing SCS SNOTEL system. The SCS needs snowpack and related climatological information from the area to improve the snow data collection network.

Therefore, the Participant and the SCS agree as follows:

A. The Participant agrees:

1. To reimburse the SCS for operation and maintenance of the Quartz Peak SNOTEL site on an annual basis at an amount agreed upon by the Participant and the SCS.

2. To obtain, and keep in force, the necessary permits, right-of-ways, and access for this site and to provide copies to the SCS.

B. The SCS agrees:

1. To operate and maintain the Quartz Peak SNOTEL site in accordance with SCS standards and specifications.

2. To provide the Participant with computer access and training for the purpose of obtaining meteorologic data from the site.

C. It is mutually understood and agreed:

1. The SCS will submit a billing for the Participant's share of the 1991 fiscal year (Oct. 1 - Sept. 30) operation and maintenance in the amount of $1800, due and payable after January 1, 1991. Each year thereafter, the SCS will submit one annual billing in the amount agreed upon for operation and maintenance, due and payable after the first of January. Payments must be received on or before the due date set forth in the billing, otherwise it will be considered a late payment. For such late payments, interest will accrue on the unpaid amount at the percentage rate based on the current value of funds to the U.S. Treasury for each 30-day period or portion thereof that payment is delayed. Payments made by wire will be accepted and credited on the date received by the designated collection official.

2. Upon reimbursement to the SCS of the total amount set forth in A.1. and C.1., all further technical services for snow survey activities will be absorbed by the SCS.

3. All hardware and equipment associated with the SNOTEL site will remain the property of the SCS. In the case of a catastrophic event, such as fire, vandalism, or major component failure that might involve severe damage or major replacement, the SCS will not be held responsible. Instead, a re-evaluation of the program by the interested parties will be made to decide on a course of action.

4. The full cost of procurement and installation of any additional sensors (above and beyond the standard snowpack water content, precipitation, and current, maximum, minimum and average air temperatures) desired by the Participant will be fully borne by the Participant.

5. This agreement supersedes any previous agreements, and will remain in effect through the current fiscal year (i.e., through September 30, 1991). It may be renewed or modified each subsequent fiscal year by an exchange of written correspondence

between the parties. It may be terminated by either party upon thirty days written notice to the other party. Upon termination, the annual O&M costs will be prorated over the portion of the year the agreement was in force.

6. SCS intends to fulfill its obligations stated in this agreement, but SCS cannot make commitments in excess of appropriated funds authorized by law and administratively made available. If SCS cannot fulfill its obligations because Congress fails to appropriate funds, this agreement will automatically terminate and the Participant will proportionally reimburse SCS for its share of the work completed before the termination.

7. No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this agreement, or to any benefit arising from it. However, this clause does not apply to this agreement to the extent that this agreement is made with a corporation for the corporation's general benefit.

8. The program or activities conducted under this agreement or memorandum of understanding will be in compliance with the nondiscrimination provisions contained in the Titles VI and VII of the Civil Rights Act of 1964, as amended; the Civil Rights Restoration Act of 1987 (public Law 100-259); and other nondiscrimination statutes: namely, Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendments of 1972, and the Age Discrimination Act of 1975. They will also be in accordance with regulations of the Secretary of Agriculture (7 CFR-15, Subparts A & B), which provide that no person in the United States shall on the grounds of race, color, national origin, age, sex, religion, marital status, or handicap be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving federal financial assistance from the Department of Agriculture or any agency thereof.

SPOKANE COUNTY

By: _____

Title: Chairman Board of County Commissioners

Date: 2/26/91

UNITED STATES DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

By: Linda E. Burton acting

Title: State Conservationist

Date: 1-7-91

Authority: 16 U.S.C. 590 a(3)

B-5: RESOLUTION FOR IMPLEMENTATION OF THE COMPREHENSIVE STORMWATER PLAN

No. 99 1034

BEFORE THE BOARD OF COUNTY COMMISSIONERS
OF SPOKANE COUNTY, WASHINGTON
AS EX-OFFICIO SUPERVISORS OF THE NEWMAN LAKE FLOOD CONTROL ZONE DISTRICT

IN THE MATTER OF IMPLEMENTING	)	
COMPREHENSIVE PLAN OF DEVELOPMENT	)	RESOLUTION
FOR STORMWATER CONTROL IN	)	
THE NEWMAN LAKE WATERSHED	)	

WHEREAS, pursuant to the provisions of the RCW Section 86.15.050 the Board of County Commissioners shall be ex-officio by virtue of their office, supervisors of the Newman Lake Flood Control Zone District; and

WHEREAS, pursuant to RCW Section 86.15.060 administration of the affairs of the Newman Lake Flood Control Zone District shall be in the County Engineer; and

WHEREAS, implementation of the Comprehensive Plan of Development for Stormwater Control in the Newman Lake Watershed is critical for the improvement of Newman Lake water quality; and

WHEREAS, implementation of this plan is required to obtain renewal of the Alum Injection System NPDES operating permit from the Washington Sate Department of Ecology; and,

WHEREAS, pursuant of RCW Section 86.15.060, County Engineer William A. Johns, as administrator of the affairs of the District, has recommended that the attached Plan Outline for the Implementation of the Comprehensive Plan of Development in the Newman Lake Watershed, be incorporated in the Newman Lake Flood Control Zone District's Policy and Budget planning;

NOW, THEREFORE, BE IT HEREBY RESOLVED by the Board of County Commissioners of Spokane County, as ex-officio supervisors of the Newman Lake Flood Control Zone District, that the attached Implementation Plan Outline is adopted as District Policy and its components be incorporated into the District's Policy and Procedures Document and future budget planning, commencing on January 1, 2000.

NOW, THEREFORE, BE IT FURTHER RESOLVED, the Chairman of the Board of County Commissioners, acting on behalf of the Board, or a majority of the Board, is hereby authorized to execute, by and on behalf of the District at other than an open meeting, all modifications or amendments in conjunction therewith.

APPROVED BY THE BOARD this
16th **day of** November, **1999**

ATTEST:
VICKY M. DALTON
CLERK OF THE BOARD

BY: Daniela Erickson
Daniela Erickson, Deputy

BOARD OF COMMISSIONERS SPOKANE COUNTY SEAL SPOKANE COUNTY, WA

BOARD OF COUNTY COMMISSIONERS
OF SPOKANE, COUNTY, WASHINGTON

M. Kate McCaslin, Chair

John Roskelley, Vice-Chair

Philip D. Harris

NEWMAN LAKE FLOOD CONTROL ZONE DISTRICT

99 1034

Implementation Plan Outline for the Comprehensive Plan of Development for Stormwater Control in the Newman Lake Watershed

This Implementation Plan will be integrated into the Newman Lake Flood Control Zone District (District) Policy and Procedures and annual Budget planning process. This Plan will be implemented in cooperation with and with the assistance of the Newman Lake Watershed Committee (NLWC) and the Newman Lake Properties Owners Association (NLPOA).

Notes: 1. District funding for Plan components is limited to Newman Lake water quality benefit assessment funding. District efforts will therefore be directed to Newman Lake watershed and water quality impacts only.

2. This is a long-term plan of action and dates and effort/funding estimates are guidelines for project prioritization and planning only. This is especially true of large restoration projects, dependent on obtaining private property owner cooperation and grant/long-term loan funding.

3. Many items fall into different categories. For example, work by volunteers in watershed monitoring and restoration also helps educate the community on the sensitivity of the watershed to disturbances. However, these items are listed only once to avoid confusion on total effort required.

Key for Effort and Funding Column:
NLE- Newman Lake Engineer
Env. Tech- Environmental Programs Technician
Lake Tech- Aerator Tech and/or Flood Control Tech
Vol- Community Volunteer with NLWC, NLPOA, or SCOPE.
Funding- District funding req'd in addition to salary and OH costs

Comprehensive Plan Recommendation/ Implementation Item Description	Planned Date of Initiation	Estimated Date of Completion	Estimate of effort and funding required
A. Comprehensive Plan Recommendation #1: Implement a whole-watershed management policy to improve implementation and encourage enforcement of existing land use regulations including erosion control ordinances.			
Implementation Plan Items:			
1. Use District resources to coordinate and improve enforcement of county ordinances and state regulations that impact Lake Water Quality (including Spokane County Shoreline and Critical Areas Ordinances, Spokane County Stormwater Guidelines / Erosion and Sediment Control Ordinance, Spokane County approach and grading permits, DNR Forest Practice Applications, DFW Hydraulic Project Approvals, and DOE Water Quality regulations) with the following:	January 1, 2000	Continuing	

Comprehensive Plan Recommendation/ Implementation Item Description	Planned Date of Initiation	Estimated Date of Completion	Estimate of effort and funding required
a. Improve identification of potential violations and problem areas with the use of current District staff and Newman Lake SCOPE volunteers to monitor watershed problems. Continue to encourage watershed residents to call in any potential violations.			Lake Techs - 10 hours + camera Vol/SCOPE- 20 hours +camera
b. Notify appropriate agencies of potential violations and permit review concerns. Forward photos as necessary. Develop network in agencies to speed actions and have them meet with the community. Have list/checklist of who to call in what situations to make response easier.			NLE/Env. Tech- 20 hrs./yr. Vol: 20 hrs/yr.
c. Notify property owners/violators in writing, educating on why and how they can fix the problem, request their cooperation and refer them to appropriate agencies. Notify NLWC by copy for follow-up.			NLE/Env. Tech- 15 hrs./yr.
d. Review (and ensure District receives) construction or use permit applications for review from applicable agencies.			NLE- 15 hrs./yr.
e. Continue reviewing and sending out FPA comment/education letters.	Continuing	Continuing	NLE/Env. Tech- 10 hrs./yr.
f. Set-up and maintain data base of identified violations including date, location (incl. address, parcel #, sub-watershed), property owner, date agencies notified, date letter sent, description of problem, any agency or district follow-up actions, etc.			Env. Tech- 24 hrs./yr.
g. Follow-up with agencies and with in-field inspections to encourage enforcement and document BMP's installed. This would be done by Newman Lake Watershed monitoring (volunteer) committee.			Vol- 80 hours + camera
2. Specific NL Watershed Stormwater ordinances are not feasible at this time. Therefore, the District and NLWC will review new ordinances or ordinance updates and revisions for opportunities to improve protection of the Newman Lake Watershed. This will include Spokane County Erosion and Sediment Control Ordinance, Spokane County Stormwater Guidelines, Spokane County's proposed new Timber Harvest Ordinance, DNR's Forest Practice regulations and Thompson Creek Watershed Prescriptions, and future Phase II NPDES Stormwater permit requirements.	Continuing	Continuing	Included in A.1 above

<u>Benefits to approach in 1 and 2 above</u>:

1. This is a "whole watershed" approach to coordination, implementation, and enforcement of regulations.
2. By providing "eyes and ears" to over worked enforcement agencies we can improve enforcement of existing regulations.
3. Follow-up will help ensure continuing involvement of agencies.
4. Tracking these efforts in a data base will allow us to demonstrate to that we are in-fact making progress in source control in the watershed.
5. These efforts will also allow us to better distribute materials to property owners to implement BMP's and

Comprehensive Plan Recommendation/ Implementation Item Description	Planned Date of Initiation	Estimated Date of Completion	Estimate of effort and funding required
monitor implementation.			
B. Comprehensive Plan Recommendation #2: Provide Education to Establish Motivation within the Community.			
Implementation Plan Items:			
1. With NLWC and NLPOA, the District will prepare and distribute three newsletters per year to all Newman Lake area residents, informing residents of watershed applicable ordinances and regulations, lake water quality reports, activities of the District, NLWC and NLPOA, etc. The District will provide all printing and mailing costs. The newsletter will be produced with volunteer labor with one issue coordinated by the District.	September 1, 1999	Continuing	Funding- $1,400/yr NLE/Env. Tech-32 hrs. Vol- 140 hours/yr.
2. NLWC will hold regular meetings (5-8/yr) to discuss priorities and goals, current activities and speakers on current topics of interest. Participants to include interested community residents and property owners, agency representatives, and a District representative	Continuing	Continuing	NLE- 24 hrs/yr. Vol- 160 hrs/yr
3. Assist NLWC with funding for preparation of educational materials and pamphlets, e.g. BMP's, ORV use, shoreline protection, aquatic weed control, nutrient reduction, etc.	January 1 , 2000	Continuing	Funding- $800/yr. Vol- 40 hours/yr.
4. With NLWC and WSU, involve students and residents in installing signage, doing restoration projects, stream and lake monitoring, and Nature mapping.	Continuing	Continuing	Vol- Nature mapping at about 200 hrs/yr. Other included in sections C, D, &E.
5. Set up NLWC and District Home page with NLWC assistance.	Continuing	July 1, 2001	NLE/Env. Tech- 8 hrs. Vol- 24 hrs.
6. Track efforts and results and include in annual report.	January 1, 2000	Continuing	
C. Comprehensive Plan Recommendation #3: Implementation of Restoration Projects.			
Implementation Plan Items:			
1. With NLWC, explore options and work with property owners on inlet riparian, wetland and flood plain preservation, with priority to Thompson creek. This will be done with WSU and NRCS technical assistance.			NLE- 16 hrs./yr. Vol- 80 hrs/yr.
a. Thompson Creek (lower 1-2 miles) that was channeled about 100 yeas ago. Pursue opportunities to preserve associated wetlands through Conservation Futures, NRCS wetland reserve, or private preservation programs. Restore riparian and wetland areas as recommended by NRCS or other experienced hydrologists.	Continuing	Continuing	Funding requirements although unknown at this time will be extensive to do all this work. Implementation will require private property owner support and cooperation and obtaining grant and or long-term loan funding.
b. Temple Rd. drainage (Inlet 9)- Continue work	July 1,2001	July 1, 2004	

Comprehensive Plan Recommendation/ Implementation Item Description	Planned Date of Initiation	Estimated Date of Completion	Estimate of effort and funding required
with NRCS and Twin Cedars Condo Assoc. owners to restore and place sediment controls on the lower inlet. Begin to work with upper inlet property owners exploring restoration and road relocation options.			
c. Mountain View Rd. drainage (Inlet 8)	July 1, 2001	July 1, 2004	
2. Pursue grant/long-term loan opportunities for restoration funds for and implement restoration of:			NLE- 24 hrs. per yr. Vol- 200 hrs/yr.
a. Thompson creek	Jan. 1, 2000	July 1, 2003	
b. Temple Rd. drainage (Inlet 9)	Jan. 1, 2002	July 1, 2005	
c. Mountain View Rd. drainage (Inlet 8)	Jan. 1, 2003	July 1, 2006	
3. Track efforts and results and include in annual report.	January 1, 2000	Continuing	
D. Comprehensive Plan Recommendation #4: Implementation of other Structural Best Management Practices (BMP's).			
<u>Implementation Plan Items:</u>			
1. Work with NLWC and private property owners to reduce use and impact of ORV's in Newman Lake watershed. Provide signage and information materials. Revisit county road closure issue.	Continuing	Dec. 31, 2000	Funding- $200 mat./yr. NLE - 16 hrs./yr. Vol- 80 hrs./yr.
2. Work with County Road Dept. in maintaining and using BMP's in Newman Lake watershed to minimize county road erosion problems.	Continuing		NLE - 32 hrs./yr.
a. Implement BMP's and restoration projects within Thompson creek road right-of-way at ORV area above gate.	Continuing	Sept. 30, 2000	
b. Install detention basins or ponds at West Newman Lake Rd. / Temple Creek drainage		Sept. 30, 2004	
c. Install detention basins or ponds at West Newman Lake Rd. / Mountain View Rd. drainage		Sept. 30, 2005	
3. Provide funding for materials such as planting and seeds, fencing, signage, gravel, for private property owner implementation of BMP's.	Jan 1, 2000	Continuing	Funding- $2500 NLE/Env. Tech- 16 hrs./yr. Vol- 40 hrs/yr
4. Provide permitting assistance for property owners to implement BMP's	Jan 1, 2000	Continuing	Env. Tech- 16 hrs./yr.
5. Track efforts and results and include in annual report.	January 1, 2000	Continuing	
E. Comp Plan Recommendation # 5: Although previous septic testing has not identified a major problem with septic wastes, systems should be limited on Lake shore.			
<u>Implementation Plan Items:</u>			
1. With WSU assistance, monitor during high water or	April 1, 2000	Continuing	3 x per yr. / Time

Comprehensive Plan Recommendation/ Implementation Item Description	Planned Date of Initiation	Estimated Date of Completion	Estimate of effort and funding required
...gh use times in lake for possible contaminants with a "peeper meter".			included in G.1. Funding- $500 equip.
2. Coordinate with Spokane Regional Health District on septic high concern areas, implementing updated testing in problem areas or areas identified through in-lake testing. Encourage septic upgrades when property is undergoing conversion, remodel or addition. Ask Health Dept. to consider strengthening upgrade requirements for Newman Lake Watershed if required.	April 1, 2000	July 1, 2002	NLE- 12 hrs./yr.
3. Track efforts and results and include in annual report.	January 1, 2000	Continuing	
F. Comprehensive Plan Recommendation #6: Operate Aeration and Alum Injection system to control internal nutrient loading.			
<u>Implementation Plan Items:</u> Operate Aerator and Alum Injection System per operating plans and NPDES permit. Monitoring will continue for negative impacts of continuous alum injection. Long term alum use will continue only as required and if no negative impacts. Long term goal is to reduce or even eliminate alum usage. Obtain NPDES permit renewal for Alum Injection System by July 1, 2000.	Continuing	Continuing	$20,000/ yr. elec., $5,000 equip maint. and repair, $27,000 per yr. alum, $500 materials/ supplies NLE- 250 hrs/yr EH- 250 hrs/yr
<u>Benefits:</u> 1. Control of internal nutrient loading which is approximately 50% of nutrient source in Newman Lake. 2. Improved clarity/water quality provided by aeration and alum injection encourages positive community involvement in Lake and watershed management.			
G. Water Quality Monitoring:			
<u>Implementation Plan Items:</u> 1. Monitor Lake and Thompson Creek inlet Water Quality with WSU assistance per existing contract. Monitoring will meet NPDES permit requirements, input for operation of alum and aeration system, and to determine Comprehensive Plan implementation effectiveness.	Continuing	Continuing	$25,000 per yr. WSU contr.
2. Investigate options, and if feasible, plan and organize volunteer assisted stream monitoring program based on DNR watershed analysis monitoring module and or WSU current and past monitoring. WSU to provide volunteer training. NLWC to provide and coordinate volunteers.	April 1, 2000	Continuing	Funding - $500 mat. Vol- ?
3. Track efforts and results and include in annual report.	January 1, 2000	Continuing	

Comprehensive Plan Recommendation/ Implementation Item Description	Planned Date of Initiation	Estimated Date of Completion	Estimate of effort and funding required
H. Annual "State of the Lake" Report:			
Implementation Plan Items: Prepare annual Report that includes a summary of water quality monitoring and documentation of all watershed efforts and results. Report to include maps of areas/locations of BMP's, violations and enforcement actions. This report will be published in the newsletter, documented in District budget/annual review process, and forwarded to DOE as part of the NPDES permit requirements. This annual report will also substitute for the submittal of water quality test data now included in the monthly NPDES Discharge Monitoring Reports (DMR's).	March 1, 2001 (for year 2000)	Continuing	W.Q. report in G.1 NLE- 20 hrs./yr.

APPENDIX C: RCW'S GOVERNING DISTRICT OPERATION

C-1: RCW 86.15, FLOOD CONTROL ZONE DISTRICTS

C-2: RCW 86.09, FLOOD CONTROL DISTRICTS

C-1: RCW 86.15, FLOOD CONTROL ZONE DISTRICTS

Chapter 86.15 RCW

FLOOD CONTROL ZONE DISTRICTS

Chapter Listing | RCW Dispositions

Sections

NOTES:

Dissolution of inactive special purpose districts: Chapter 36.96 RCW.

Local governmental organizations, actions affecting boundaries, etc., review by boundary review board: Chapter 36.93 RCW.

86.15.001
Actions subject to review by boundary review board.

The creation of a flood control zone district may be subject to potential review by a boundary review board under chapter 36.93 RCW. Extensions of service outside of the boundaries of a flood control zone district may be subject to potential review by a boundary review board under chapter 36.93 RCW.

[1989 c 84 § 65.]

86.15.010
Definitions.

The definitions set forth in this section apply through this chapter.

(1) "Board" means the county legislative authority.

(2) "Flood control improvement" means any works, projects, or other facilities necessary for the control of flood waters within the county or any zone or zones.

(3) "Flood waters" and "storm waters" means any storm waste or surplus waters, including surface water, wherever located within the county or a zone or zones where such waters endanger public highways, streams and water courses, harbors, life, or property.

(4) "Participating zones" means two or more zones found to benefit from a single flood control improvement or storm water control improvement.

(5) "Storm water control improvement" means any works, projects, or other facilities necessary to control and treat storm water within the county or any zone or zones.

(6) "Supervisors" means the board of supervisors, or governing body, of a zone.

(7) "Zones" means flood control zone districts which are quasi municipal corporations of the state of Washington created by this chapter.

[1983 c 315 § 11; 1961 c 153 § 1.]

NOTES:

Severability—1983 c 315: See note following RCW 90.03.500.

86.15.020
Zones—Creation.

The board may initiate, by affirmative vote of a majority of the board, the creation of a zone or additional zones within the county, and without reference to an existing zone or zones, for the purpose of undertaking, operating, or maintaining flood control projects or storm water control projects or groups of projects that are of special benefit to specified areas of the county. Formation of a zone may also be initiated by a petition signed by twenty-five percent of the electors within a proposed zone based on the vote cast in the last county general election. If the formation of the zone is initiated by petition, the board shall incorporate the terms of the petition in a resolution within forty days after receiving the petition from

the county auditor. Thereafter, the procedures for establishing a zone shall be the same whether initiated by motion of the board or by a petition of electors.

Petitions shall be in a form prescribed and approved by the county auditor and shall include the necessary legal descriptions and other information necessary for establishment of a zone by resolution. When the sponsors of a petition have acquired the necessary signatures, they shall present the petition to the county auditor who shall thereafter certify the sufficiency of the petition within forty-five days. If the petition is found to meet the requirements specified in this chapter, the auditor shall transmit the petition to the board for their action; if the petition fails to meet the requirements of this chapter, it shall be returned to the sponsors.

[**1983 c 315 § 12; 1961 c 153 § 2.**]

NOTES:

Severability—1983 c 315: See note following RCW **90.03.500**.

86.15.023
Zones not to include area in other zones.

A board may not establish a zone including an area located in another zone unless this area is removed from the other zone, or the other zone is dissolved, as part of the action creating the new zone.

[**1991 c 322 § 9.**]

NOTES:

Findings—Intent—Purpose—1991 c 322: See notes following RCW **86.12.200**.

86.15.025
Districts incorporating watersheds authorized—Subzones authorized—Creation, procedure—Administration—Powers.

(1) The board is authorized to establish a countywide flood control zone district incorporating the boundaries of any and all watersheds located within the county which are not specifically organized into flood control zone districts established pursuant to chapter **86.15** RCW. Upon establishment of a countywide flood control zone district as authorized by this section, the board is authorized and may divide any or all of the zone so created into separately designated subzones and such subzones shall then be operated and be legally established in the same manner as any flood control zone district established pursuant to chapter **86.15** RCW.

(2) Countywide flood control zone districts shall be established pursuant to the requirements of RCW **86.15.020**, **86.15.030** and * **86.15.040** as now law of [or] hereafter amended. Subzones established from countywide flood control zone districts shall be established by resolution of the board and the provisions of RCW **86.15.020**, **86.15.030** and shall not apply to the establishment of such subzone as authorized by this section.

(3) Such subzones shall be operated and administered in the same manner as any other flood control zone district in accordance with the provisions of chapter **86.15** RCW.

(4) Such subzones shall have authority to exercise any and all powers conferred by the provisions of RCW 86.15.080 as now law or hereafter amended.

(5) The board shall exercise the same power, authority, and responsibility over such subzones as it exercises over flood control zone districts in accordance with the provisions of chapter 86.15 RCW as now law or hereafter amended, and without limiting the generality of this subsection, the board may exercise over such subzones, the powers granted to it by RCW 86.15.160, 86.15.170, 86.15.176 and 86.15.178 as now law or hereafter amended.

[1969 ex.s. c 195 § 1.]

NOTES:

***Reviser's note:** RCW 86.15.040 was repealed by 1991 c 322 § 13.

86.15.030
Districts incorporating watersheds authorized—Formation, hearing and notice.

Upon receipt of a petition asking that a zone be created, or upon motion of the board, the board shall adopt a resolution which shall describe the boundaries of such proposed zone; describe in general terms the flood control needs or requirements within the zone; set a date for public hearing upon the creation of such zone, which shall be not more than thirty days after the adoption of such resolution. Notice of such hearing and publication shall be had in the manner provided in RCW 36.32.120(7).

At the hearing scheduled upon the resolution, the board shall permit all interested parties to be heard. Thereafter, the board may reject the resolution or it may modify the boundaries of such zone and make such other corrections or additions to the resolutions as they deem necessary to the accomplishment of the purpose of this chapter: PROVIDED, That if the boundaries of such zone are enlarged, the board shall hold an additional hearing following publication and notice of such new boundaries: PROVIDED FURTHER, That the boundaries of any zone shall generally follow the boundaries of the watershed area affected: PROVIDED FURTHER, That the immediately preceding proviso shall in no way limit or be construed to prohibit the formation of a countywide flood control zone district authorized to be created by RCW 86.15.025.

Within ten days after final hearing on a resolution, the board shall issue its order.

[1969 ex.s. c 195 § 2; 1961 c 153 § 3.]

86.15.035
Cooperative watershed management.

In addition to the authority provided in this chapter, flood control zone districts may participate in and expend revenue on cooperative watershed management arrangements and actions, including without limitation those under chapter 39.34 RCW, under chapter 39.106 RCW, and under other intergovernmental agreements authorized by law, for purposes of water supply, water quality, and water resource and habitat protection and management.

[2011 c 258 § 16; 2003 c 327 § 19.]

NOTES:

Short title—Purpose—Intent—2011 c 258: See RCW 39.106.010.

Finding—Intent—2003 c 327: See note following RCW 39.34.190.

86.15.050
Zones—Supervisors—Election of supervisors.

(1) The board of county commissioners of each county shall be ex officio, by virtue of their office, supervisors of the zones created in each county. In any zone with more than two thousand residents, an election of supervisors other than the board of county commissioners may be held as provided in this section.

(2) When proposed by citizen petition or by resolution of the board of county commissioners, a ballot proposition authorizing election of the supervisors of a zone shall be submitted by ordinance to the voters residing in the zone at any general election, or at any special election which may be called for that purpose.

(3) The ballot proposition shall be submitted (a) if the board of county supervisors enacts an ordinance submitting the proposition after adopting a resolution proposing the election of supervisors of a zone; or (b) if a petition proposing the election of supervisors of a zone is submitted to the county auditor of the county in which the zone is located that is signed by registered voters within the zone, numbering at least fifteen percent of the votes cast in the last county general election by registered voters within the zone.

(4) Upon receipt of a citizen petition under subsection (3)(b) of this section, the county auditor shall determine whether the petition is signed by a sufficient number of registered voters, using the registration records and returns of the preceding general election, and, no later than forty-five days after receipt of the petition, shall attach to the petition the auditor's certificate stating whether or not sufficient signatures have been obtained. If the signatures are found by the auditor to be insufficient, the petition shall be returned to the person filing it.

(5) The ballot proposition authorizing election of supervisors of zones shall appear on the ballot of the next general election or at the next special election date specified under RCW 29A.04.330 occurring sixty or more days after the last resolution proposing election of supervisors or the date the county auditor certifies that the petition proposing such election contains sufficient valid signatures.

(6) The petition proposing the election of zone supervisors, or the ordinance submitting the question to the voters, shall describe the proposed election process. The ballot proposition shall include the following:

☐ "For the direct election of flood control zone district supervisors."

☐ "Against the direct election of flood control zone district supervisors."

(7) The ordinance or petition submitting the ballot proposition shall designate the proposed composition of the supervisors of zones, which shall be clearly described in the ballot proposition. The ballot proposition shall state that the zone supervisors shall thereafter be selected by election, and, at the same election at which the proposition is submitted to the voters as to whether to elect zone supervisors, three zone supervisors shall be elected. The election of zone supervisors is null and void if the voters, by a simple majority, do not approve the direct election of the zone supervisors. Candidates shall run for specific supervisor positions. No primary may be held to nominate candidates. The person receiving the greatest number of votes for each position shall be elected as a supervisor. The staggering of the terms of office shall occur as follows: (a) The person who is elected receiving the greatest number of votes shall be elected to a six-year term of office if the election is held in an odd-numbered year or a five-year term of office if the election is held in an even-numbered year; (b) the person who is elected receiving the second greatest number of votes shall be elected to a four-year term of office if the election is held in an odd-numbered year or a three-year term of office if the election is held in an even-numbered year; and (c) the other person who is elected shall be elected to a two-year term of office if the election is held in an odd-numbered year or a one-year term of office if the election is held in an even-numbered year. The initial

supervisors shall take office immediately when they are elected and qualified, and for purposes of computing their terms of office the terms shall be assumed to commence on the first day of January in the year after they are elected. Thereafter, all supervisors shall be elected to six-year terms of office. All supervisors shall serve until their respective successors are elected and qualified and assume office in accordance with RCW **29A.60.280**. Vacancies may occur and shall be filled as provided in chapter **42.12** RCW.

(8) The costs and expenses directly related to the election of zone supervisors shall be borne by the zone.

[**2015 c 53 § 102; 2003 c 304 § 1; 1961 c 153 § 5.**]

86.15.055
Elected supervisors—Compensation.

(1) In a zone with supervisors elected pursuant to RCW **86.15.050**, the supervisors may, as adjusted in accordance with subsection (4) of this section, each receive up to one hundred fourteen dollars per day or portion of a day spent in actual attendance at official meetings of the governing body or in performance of other official services or duties on behalf of the zone. The compensation for supervisors in office on January 1, 2015, is fixed at one hundred fourteen dollars per day. The board of county commissioners shall fix any such compensation to be paid to the initial supervisors during their initial terms of office. The supervisors shall fix the compensation to be paid to the supervisors thereafter. Compensation for the supervisors shall not exceed ten thousand nine hundred forty-four dollars in one calendar year.

(2) A supervisor is entitled to reimbursement for reasonable expenses actually incurred in connection with performance of the duties of a supervisor, including subsistence and lodging, while away from the supervisor's place of residence, and mileage for use of a privately owned vehicle in accordance with chapter **42.24** RCW.

(3) Any supervisor may waive all or any portion of his or her compensation payable under this section as to any month or months during his or her term of office, by a written waiver filed with the supervisors as provided in this section. The waiver, to be effective, must be filed any time after the member's election and prior to the date on which the compensation would otherwise be paid. The waiver shall specify the month or period of months for which it is made.

(4) The dollar thresholds established in this section must be adjusted for inflation by the office of financial management every five years, beginning July 1, 2018, based upon changes in the consumer price index during that time period. "Consumer price index" means, for any calendar year, that year's annual average consumer price index, for Washington state, for wage earners and clerical workers, all items, compiled by the bureau of labor and statistics, United States department of labor. If the bureau of labor and statistics develops more than one consumer price index for areas within the state, the index covering the greatest number of people, covering areas exclusively within the boundaries of the state and including all items, must be used for the adjustments of inflation in this section. The office of financial management must calculate the new dollar threshold and transmit it to the office of the code reviser for publication in the Washington State Register at least one month before the new dollar threshold is to take effect.

[**2015 c 165 § 1; 2005 c 127 § 2.**]

NOTES:

Effective date—2005 c 127: "This act is necessary for the immediate preservation of the public peace, health, or safety, or support of the state government and its existing public institutions, and takes effect immediately [April 21, 2005]." [**2005 c 127 § 3.**]

86.15.060
Administration.

(1) Except as provided in subsection (2) of this section, administration of the affairs of zones shall be in the county engineer. The engineer may appoint such deputies and engage such employees, specialists, and technicians as may be required by the zone and as are authorized by the zone's budget. Subject to the approval of the supervisors, the engineer may organize, or reorganize as required, the zone into such departments, divisions, or other administrative relationships as he or she deems necessary to its efficient operation.

(2) In a zone with supervisors elected pursuant to RCW **86.15.050**, the supervisors may provide for administration of the affairs of the zone by other than the county engineer, pursuant to the authority established in RCW **86.15.095** to hire employees, staff, and services and to enter into contracts.

[**2013 c 23 § 476; 2005 c 127 § 1; 1961 c 153 § 6.**]

NOTES:

Effective date—2005 c 127: See note following RCW **86.15.055**.

86.15.070
Advisory committees.

The board may appoint a countywide advisory committee, which shall consist of not more than fifteen members. The board also may appoint an advisory committee for any zone or combination of two or more zones which committees shall consist of not more than five members. Members of an advisory committee shall serve without pay and shall serve at the pleasure of the board.

[**1967 ex.s. c 136 § 6; 1961 c 153 § 7.**]

86.15.080
General powers.

A zone or participating zone may:

(1) Exercise all the powers and immunities vested in a county for flood water or storm water control purposes under the provisions of chapters **86.12**, 86.13, 36.89, and **36.94** RCW: PROVIDED, That in exercising such powers, all actions shall be taken in the name of the zone and title to all property or property rights shall vest in the zone;

(2) Plan, construct, acquire, repair, maintain, and operate all necessary equipment, facilities, improvements, and works to control, conserve, and remove flood waters and storm waters and to otherwise carry out the purposes of this chapter including, but not limited to, protection of the quality of water sources;

(3) Take action necessary to protect life and property within the district from flood water damage, including in the context of an emergency, as defined in RCW **38.52.010**, using covered volunteer

emergency workers, as defined in RCW **38.52.010** and **38.52.180**(5)(a), subject to and in accordance with the terms of RCW **38.52.180**;

(4) Control, conserve, retain, reclaim, and remove flood waters and storm waters, including waters of lakes and ponds within the district, and dispose of the same for beneficial or useful purposes under such terms and conditions as the board may deem appropriate, subject to the acquisition by the board of appropriate water rights in accordance with the statutes;

(5) Acquire necessary property, property rights, facilities, and equipment necessary to the purposes of the zone by purchase, gift, or condemnation: PROVIDED, That property of municipal corporations may not be acquired without the consent of such municipal corporation;

(6) Sue and be sued in the name of the zone;

(7) Acquire or reclaim lands when incidental to the purposes of the zone and dispose of such lands as are surplus to the needs of the zone in the manner provided for the disposal of county property in chapter **36.34** RCW;

(8) Cooperate with or join with the state of Washington, United States, another state, any agency, corporation or political subdivision of the United States or any state, Canada, or any private corporation or individual for the purposes of this chapter;

(9) Accept funds or property by loan, grant, gift or otherwise from the United States, the state of Washington, or any other public or private source;

(10) Remove debris, logs, or other material which may impede the orderly flow of waters in streams or water courses: PROVIDED, That such material shall become property of the zone and may be sold for the purpose of recovering the cost of removal: PROVIDED FURTHER, That valuable material or minerals removed from public lands shall remain the property of the state;

(11) Provide grant funds to political subdivisions of the state that are located within the boundaries of the zone, so long as the use of the grant funds is within the purposes authorized under this chapter.

[**2010 c 46 § 2; 1983 c 315 § 13; 1961 c 153 § 8.**]

NOTES:

Severability—1983 c 315: See note following RCW **90.03.500**.

86.15.090
Extraterritorial powers.

A zone may, when necessary to protect life and property within its limits from flood water, exercise any of its powers specified in RCW **86.15.080** outside its territorial limits.

[**1961 c 153 § 9.**]

86.15.095
Zones constitute quasi municipal corporation—Constitutional and statutory powers.

A flood control zone district is a quasi municipal corporation, an independent taxing "authority" within the meaning of Article VII, section 1 of the state Constitution, and a "taxing district" within the meaning of Article VII, section 2 of the state Constitution.

A flood control zone district constitutes a body corporate and possesses all the usual powers of a corporation for public purposes as well as all other powers that may now or hereafter be specifically conferred by statute, including, but not limited to, the authority to hire employees, staff, and services, to enter into contracts, and to sue and be sued.

[1983 c 315 § 6.]

NOTES:

Severability—1983 c 315: See note following RCW 90.03.500.

86.15.100
Flood control or storm water control improvements—Authorization.

The supervisors may authorize the construction, extension, enlargement, or acquisition of necessary flood control or storm water control improvements within the zone or any participating zones. The improvements may include, but shall not be limited to the extension, enlargement, construction, or acquisition of dikes and levees, drain and drainage systems, dams and reservoirs, or other flood control or storm water control improvements; widening, straightening, or relocating of stream or water courses; and the acquisition, extension, enlargement, or construction of any works necessary for the protection of stream and water courses, channels, harbors, life, and property.

[1983 c 315 § 14; 1961 c 153 § 10.]

NOTES:

Severability—1983 c 315: See note following RCW 90.03.500.

86.15.110
Flood control or storm water control improvements—Initiation—Comprehensive plan.

Flood control or storm water control improvements may be extended, enlarged, acquired, or constructed by a zone pursuant to a resolution adopted by the supervisors. The resolution shall specify:

(1) Whether the improvement is to be extended, enlarged, acquired, or constructed;

(2) That either:

(a) A comprehensive plan of development for flood control has been prepared for the stream or water course upon which the improvement will be enlarged, extended, acquired, or constructed, and that the improvement generally contributes to the objectives of the comprehensive plan of development: PROVIDED, That the plan shall be first submitted to the state department of ecology at least ninety days in advance of the beginning of any flood control project or improvement; and shall be subject to all the regulatory control provisions by the department of ecology as provided in chapter 86.16 RCW; or

(b) A comprehensive plan of development for storm water control has been prepared for the area that will be served by the proposed storm water control facilities;

(3) If the improvement is to be constructed, that preliminary engineering studies and plans have been made, and that the plans and studies are on file with the county engineer;

(4) The estimated cost of the acquisition or construction of the improvement, together with such supporting data as will reasonably show how the estimates were arrived at; and

(5) That the improvement will benefit:

(a) Two or more zones, hereinafter referred to as participating zones; or

(b) A single zone; or

(c) The county as a whole, as well as a zone or participating zones.

[1983 c 315 § 15; 1961 c 153 § 11.]

NOTES:

Severability—1983 c 315: See note following RCW 90.03.500.

86.15.120
Flood control or storm water control improvements—Hearing, notice.

Before finally adopting a resolution to undertake any flood control improvement or storm water control improvement, the supervisors shall hold a hearing thereon. Notice and publication of the hearing shall be given under RCW 36.32.120(7). The supervisors may conduct any such hearing concurrently with a hearing on the establishment of a flood control zone, and may in such case designate the proposed zone a beneficiary of any improvement.

[1983 c 315 § 16; 1961 c 153 § 12.]

NOTES:

Severability—1983 c 315: See note following RCW 90.03.500.

86.15.130
Zone treasurer—Funds.

The treasurer of each zone shall be the county treasurer. He or she shall establish within his or her office a zone flood control fund for each zone into which shall be deposited the proceeds of all tax levies, assessments, gifts, grants, loans, or other revenues which may become available to a zone.

The treasurer shall also establish the following accounts within the zone fund:

(1) For each flood control improvement financed by a bond issue, an account to which shall be deposited the proceeds of any such bond issue; and

(2) An account for each outstanding bond issue to which will be deposited any revenues collected for the retirement of such outstanding bonds or for the payment of interest or charges thereon; and

(3) A general account to which all other receipts of the zone shall be deposited.

[2013 c 23 § 477; 1961 c 153 § 13.]

86.15.140
Budget.

The supervisors shall annually at the same time county budgets are prepared adopt a budget for the zone, which budget shall be divided into the following appropriation items: (1) Overhead and administration; (2) maintenance and operation; (3) construction and improvements; and (4) bond retirement and interest. In preparing the budget, the supervisors shall show the total amount to be expended in each appropriation item and the proportionate share of each appropriation item to be paid from each account of the zone.

In preparing the annual budget, the supervisors shall under the appropriation item of construction and improvement list each flood control improvement or storm water control improvement and the estimated expenditure to be made for each during the ensuing year. The supervisors may at any time during the year, if additional funds become available to the zone, adopt a supplemental budget covering additional authorized improvements.

The zone budget or any supplemental budget shall be approved only after a public hearing, notice of which shall be given as provided by RCW **36.32.120**(7).

[**1983 c 315 § 17; 1961 c 153 § 14.**]

NOTES:

Severability—1983 c 315: See note following RCW **90.03.500**.

86.15.150
County aid.

Whenever the supervisors have found under the provisions of RCW **86.15.110** that a flood control improvement or storm water control improvement initiated by any zone will be of benefit to the county as a whole, as well as to the zone or participating zones; or whenever the supervisors have found that the maintenance and operation of any flood control improvement or storm water control improvement within any zone will be of benefit to the overall flood control program or storm water control program of the county, the board may authorize the transfer of any funds available to the county for flood control or storm water control purposes to any zone or participating zones for flood control or storm water control purposes.

[**1983 c 315 § 18; 1961 c 153 § 15.**]

NOTES:

Severability—1983 c 315: See note following RCW **90.03.500**.

86.15.160
Excess levies, assessments, regular levies, and charges—Local improvement districts.

For the purposes of this chapter the supervisors may authorize:

(1) An annual excess ad valorem tax levy within any zone or participating zones when authorized by the voters of the zone or participating zones under RCW **84.52.052** and **84.52.054**;

(2) An assessment upon property, including state property, specially benefited by flood control improvements or storm water control improvements imposed under chapter **86.09** RCW;

(3) Within any zone or participating zones an annual ad valorem property tax levy of not to exceed fifty cents per thousand dollars of assessed value when the levy will not take dollar rates that other taxing districts may lawfully claim and that will not cause the combined levies to exceed the constitutional and/or statutory limitations, and the additional levy, or any portion thereof, may also be made when dollar rates of other taxing units is released therefor by agreement with the other taxing units from their authorized levies;

(4) A charge, under RCW **36.89.080**, for the furnishing of service to those who are receiving or will receive benefits from storm water control facilities and who are contributing to an increase in surface water runoff. The rate or charge imposed under this section shall be reduced by a minimum of ten percent for any new or remodeled commercial building that utilizes a permissive rainwater harvesting system. Rainwater harvesting systems shall be properly sized to utilize the available roof surface of the building. The jurisdiction shall consider rate reductions in excess of ten percent dependent upon the amount of rainwater harvested;

(5) Except as otherwise provided in RCW **90.03.525**, any public entity and public property, including the state and state property, shall be liable for the charges to the same extent a private person and privately owned property is liable for the charges, and in setting these rates and charges, consideration may be made of in-kind services, such as stream improvements or donation of property;

(6) The creation of local improvement districts and utility local improvement districts, the issuance of improvement district bonds and warrants, and the imposition, collection, and enforcement of special assessments on all property, including any state-owned or other publicly-owned property, specially benefited from improvements in the same manner as provided for counties by chapter **36.94** RCW.

[**2003 c 394 § 8; 1986 c 278 § 60; 1983 c 315 § 19; 1973 1st ex.s. c 195 § 131; 1961 c 153 § 16.**]

NOTES:

Severability—1986 c 278: See note following RCW **36.01.010**.

Severability—1983 c 315: See note following RCW **90.03.500**.

Severability—Effective dates and termination dates—Construction—1973 1st ex.s. c 195: See notes following RCW **84.52.043**.

*Rates and charges for storm water control facilities—Limitations—Definitions: RCW **90.03.500** through **90.03.525**. See also RCW **35.67.025**, **35.92.021**, **36.89.085**, and **36.94.145**.*

86.15.162
Delinquent assessment—Sale of parcel—Accrual of interest.

If the delinquent assessment remains unpaid on the date fixed for the sale under RCW **86.09.496** and **86.09.499**, the parcel shall be sold in the same manner as provided under *RCW **87.03.310** through **87.03.330**. If the district reconveys the land under *RCW **87.03.325** due to accident, inadvertence, or misfortune, however, interest shall accrue not at the rate provided in RCW **87.03.270**, but at the rate provided in RCW **86.09.505**.

[**1983 c 315 § 7.**]

NOTES:

***Reviser's note:** RCW **87.03.310** through **87.03.330** were repealed by **1988 c 134 § 15.** Later enactment, see chapter **87.06** RCW.

Severability—1983 c 315: See note following RCW **90.03.500**.

86.15.165
Voluntary assessments for flood control or storm water control improvements—Procedure—Disposition of proceeds—Use.

The supervisors may provide by resolution for levying voluntary assessments, under a mode of annual installments extending over a period not exceeding fifteen years, on property benefited from a flood control improvement or storm water control improvement. The voluntary assessment shall be imposed only after each owner of property benefited by the flood control improvement has agreed to the assessment by written agreement with the supervisors. The agreement shall be recorded with the county auditor and the obligations under the agreement shall be binding upon all heirs and all successors in interest of the property.

The voluntary assessments need not be uniform or directly related to benefits to the property from the flood control improvement or storm water control improvement.

The levying, collection, and enforcement authorized in this section shall be in the manner now and hereafter provided by law for the levying, collection, and enforcement of local improvement assessments by cities and towns, insofar as those provisions are not inconsistent with the provisions of this chapter.

The disposition of all proceeds from voluntary assessments shall be in accordance with RCW **86.15.130**.

The proceeds from voluntary assessments may be used for any flood control improvement or storm water control improvement not inconsistent with the provisions of this chapter, and in addition the proceeds may be used for operation and maintenance of flood control improvements or storm water control improvements constructed under the authority of this chapter.

[**1983 c 315 § 20; 1969 ex.s. c 195 § 3.**]

NOTES:

Severability—1983 c 315: See note following RCW **90.03.500**.

86.15.170
General obligation bonds.

The supervisors may authorize the issuance of general obligation bonds to finance any flood control improvement or storm water control improvement and provide for the retirement of the bonds with ad valorem property tax levies. The general obligation bonds may be issued and the bond retirement levies imposed only when the voters of the flood control zone district approve a ballot proposition authorizing both the bond issuance and imposition of the excess bond retirement levies pursuant to Article VIII, section 6 and Article VII, section 2(b) of the state Constitution and RCW **84.52.056**. Elections shall be held as provided in RCW **39.36.050**. The bonds shall be issued on behalf of the zone or participating zones and be approved by the voters of the zone or participating zones when the improvement has by the resolution, provided in RCW **86.15.110**, been found to be of benefit to a zone or participating zones. The bonds may not exceed an amount, together with any outstanding general obligation indebtedness, equal to three-fourths of one percent of the value of taxable property within the zone or participating zones, as the term "value of the taxable property" is defined in RCW **39.36.015**. The bonds shall be issued and sold in accordance with chapter **39.46** RCW.

[1984 c 186 § 62. Prior: 1983 c 315 § 21; 1983 c 167 § 211; 1961 c 153 § 17.]

NOTES:

Purpose—1984 c 186: See note following RCW 39.46.110.

Severability—1983 c 315: See note following RCW 90.03.500.

Liberal construction—Severability—1983 c 167: See RCW 39.46.010 and note following.

86.15.175
Community revitalization financing—Public improvements.

In addition to other authority that a flood control zone district possesses, a flood control zone district may provide any public improvement as defined under RCW 39.89.020, but this additional authority is limited to participating in the financing of the public improvements as provided under RCW 39.89.050.

This section does not limit the authority of a flood control zone district to otherwise participate in the public improvements if that authority exists elsewhere.

[2001 c 212 § 23.]

86.15.176
Service charges authorized—Disposition of revenue.

The supervisors may provide by resolution for revenues by fixing rates and charges for the furnishing of service to those served or receiving benefits from a flood control improvement including public entities, except as otherwise provided in RCW 90.03.525. The service charge shall be uniform for the same class of benefits or service. In classifying services furnished or benefits received the board may in its discretion consider the character and use of land and its water runoff characteristics and any other matters that present a reasonable difference as a ground for distinction. Service charges shall be applicable to a zone or participating zones. The disposition of all revenue from service charges shall be in accordance with RCW 86.15.130.

[1986 c 278 § 61; 1983 c 315 § 22; 1967 ex.s. c 136 § 7.]

NOTES:

Severability—1986 c 278: See note following RCW 36.01.010.

Severability—1983 c 315: See note following RCW 90.03.500.

86.15.178
Revenue bonds—Lien for delinquent service charges.

(1) The supervisors may authorize the issuance of revenue bonds to finance any flood control improvement or storm water control improvement. The bonds may be issued by the supervisors in the

same manner as prescribed in RCW 36.67.510 through 36.67.570 pertaining to counties. The bonds shall be issued on behalf of the zone or participating zones when the improvement has by the resolution, provided in RCW 86.15.110, been found to be of benefit to a zone or participating zones. The bonds may be in any form, including bearer bonds or registered bonds.

Each revenue bond shall state on its face that it is payable from a special fund, naming the fund and the resolution creating the fund.

Revenue bond principal, interest, and all other related necessary expenses shall be payable only out of the appropriate special fund.

A zone or participating zones shall have a lien for delinquent service charges, including interest thereon, against the premises benefited by a flood control improvement or storm water control improvement, which lien shall be superior to all other liens and encumbrances except general taxes and local and special assessments. The lien shall be effective and shall be enforced and foreclosed in the same manner as provided for sewerage liens of cities and towns by RCW 35.67.200 through 35.67.290.

(2) Notwithstanding subsection (1) of this section, such bonds may be issued and sold in accordance with chapter 39.46 RCW.

[1991 c 322 § 10. Prior: 1983 c 315 § 23; 1983 c 167 § 212; 1967 ex.s. c 136 § 8.]

NOTES:

Findings—Intent—Purpose—1991 c 322: See notes following RCW 86.12.200.

Severability—1983 c 315: See note following RCW 90.03.500.

Liberal construction—Severability—1983 c 167: See RCW 39.46.010 and note following.

86.15.180
Protection of public property.

Any agency or department of the state of Washington, or any political subdivision or municipal corporation of the state may contribute funds to the county or any zone or zones to assist the county, zone or zones in carrying out the purposes of this chapter when such agency, department, subdivision or municipal corporation finds such action will materially contribute to the protection of publicly owned property under its jurisdiction.

[1961 c 153 § 18.]

86.15.190
Abatement of nuisances.

The supervisors may order, on behalf of the zone or participating zones, that an action be brought in the superior court of the county to require the removal of publicly or privately owned structures, improvements, facilities, or accumulations of debris or materials that materially contribute to the dangers of loss of life or property from flood waters. Where the structures, improvements, facilities, or accumulations of debris or materials are found to endanger the public health or safety the court shall declare them a public nuisance, and forthwith order their abatement. If the abatement is not completed within the time ordered by the court, the county may abate the nuisance and charge the cost of the action against the land

upon which the nuisance is located, and the payment of the charge may be enforced and collected in the same manner at the same time as county property taxes.

[1983 c 315 § 24; 1961 c 153 § 19.]

NOTES:

Severability—1983 c 315: See note following RCW 90.03.500.

86.15.200
Flood control zones—Consolidation, abolishment.

The board may consolidate any two or more zones or abolish any zone pursuant to a resolution adopted by the board providing for such action. Before adopting such a resolution, the board shall conduct a public hearing notice of which shall be given as provided by RCW 36.32.120(7). Any indebtedness of any zone or zones which are abolished or consolidated shall not be impaired by their abolishment or consolidation, and the board shall continue to levy and collect all necessary taxes and assessments until such debts are retired. Whenever twenty-five percent of the electors of any zone file a petition, meeting the requirements of sufficiency set forth in RCW 86.15.020, asking that a zone be abolished, the board shall: (1) Adopt a resolution abolishing the zone or (2) at the next general election place a proposition on the ballot calling for a yes or no vote on the abolition of the zone.

[1961 c 153 § 20.]

86.15.210
Transfer of property.

A diking, drainage, or sewerage improvement district, flood control district, diking district, drainage district, intercounty diking and drainage district, or zone may convey title to any property improvements or assets of the districts or zone to the county or a zone for flood control purposes. If the property improvements or assets are surplus to the needs of the district or zone the transfer may be made by private negotiations, but in all other cases the transfers are subject to the approval of a majority of the registered voters within the district or zone. Nothing in this section permits any district or zone to impair the obligations of any debt or contract of the district or zone.

[1983 c 315 § 25; 1961 c 153 § 21.]

NOTES:

Severability—1983 c 315: See note following RCW 90.03.500.

86.15.220
Planning of improvements.

Nothing in this chapter shall be construed as limiting the right of counties under the provisions of chapters 86.12 and 86.13 RCW to undertake the planning or engineering studies necessary for flood control improvements or financing the same from any funds available for such purposes.

[1961 c 153 § 22.]

86.15.230
Public necessity of chapter.

This chapter is hereby declared to be necessary for the public health, safety, and welfare and that the taxes and special assessments authorized hereby are found to be for a public purpose.

[1961 c 153 § 23.]

86.15.900
Severability—Construction—1961 c 153.

If any provision of this chapter, as now or hereafter amended, or its application to any person or circumstance is held invalid, the remainder of the chapter, and its application to other persons or circumstances shall not be affected.

[1961 c 153 § 24.]

86.15.910
Construction of chapter.

This chapter shall be complete authority for the accomplishment of purposes hereby authorized, and shall be liberally construed to accomplish its purposes. Any restrictions, limitations or regulations contained shall not apply to this chapter. Any act inconsistent herewith shall be deemed modified to conform with the provisions of this chapter for the purpose of this chapter only.

[1961 c 153 § 25.]

86.15.920
Titles not part of the chapter.

The section titles shall not be considered a part of this chapter.

[1961 c 153 § 26.]

C-2: RCW 86.09, FLOOD CONTROL DISTRICTS

Chapter 86.09 RCW

FLOOD CONTROL DISTRICTS—1937 ACT

Chapter Listing | RCW Dispositions

Sections

NOTES:

*Deferral of special assessments: Chapter **84.38** RCW.*

*Special district creation and operation: Chapter **85.38** RCW.*

86.09.001
Districts authorized—Purpose.

Flood control districts may be created and maintained in this state, as herein provided, for the protection of life and property, the preservation of the public health and the conservation and development of the natural resources of the state of Washington.

[**1937 c 72 § 1;** RRS § 9663E-1. Formerly RCW **86.08.005**, part.]

86.09.004
Districts to provide control of water—Territory includable—Powers of district wholly within city or town.

Such flood control districts shall be organized to provide for the ultimate necessary control of the entire part, or all, of the stream system of any stream or tributary, or for the protection against tidal or any bodies of water, within this state and may include all or part of the territory of any county and may combine the territory in two or more such counties, in which any of the lands benefited from the organization and maintenance of a flood control district are situated.

A district established wholly within the boundaries of any city or town may also provide for the collection, control, and safe and suitable conveyance over and across the district, of intermittent surface and drainage water, originating within or without its boundaries, to suitable and adequate outlets.

[**1965 c 26 § 1; 1937 c 72 § 2;** RRS § 9663E-2. Formerly RCW **86.08.005**, part.]

86.09.010
Authorized purposes.

Such flood control districts may be organized or maintained for any, or all, the following general purposes:

(1) The investigation, planning, construction, improvement, replacement, repair or acquisition of dams, dikes, levees, ditches, channels, canals, banks, revetments and other works, appliances, machinery and equipment and property and rights connected therewith or incidental thereto, convenient and necessary to control floods and lessen their danger and damages.

(2) The cooperation with any agency or agencies of the United States and/or of the state of Washington in investigating and controlling floods and in lessening flood dangers and damages.

[**1937 c 72 § 4;** RRS § 9663E-4. Formerly RCW **86.08.005**, part.]

86.09.013
State school or other public lands includable.

State granted school or other public lands of the state of Washington may be included within such flood control districts.

[1937 c 72 § 5; RRS § 9663E-5. Formerly RCW 86.08.010, part.]

86.09.016
Interest in public lands considered as private property—State or public title not affected.

All leases, contracts or other form of holding any interest in any state or public land shall be treated as the private property of the lessee or owner of the contractual or possessory interest therein: PROVIDED, That nothing in this chapter or in any proceeding authorized thereunder shall be construed to affect the title of the state or other public ownership.

[1937 c 72 § 6; RRS § 9663E-6. Formerly RCW 86.08.010, part.]

86.09.019
Federal lands includable.

Lands of the federal government may be included within such districts in the manner and subject to the conditions, now or hereafter specified in the statutes of the United States.

[1937 c 72 § 7; RRS § 9663E-7. Formerly RCW 86.08.010, part.]

86.09.020
Certain powers and rights governed by chapter 85.38 RCW.

Flood control districts shall possess the authority and shall be created, district voting rights shall be determined, and district elections shall be held as provided in chapter 85.38 RCW.

[1985 c 396 § 36.]

86.09.148
District's corporate powers.

A flood control district created under this chapter shall constitute a body corporate and shall possess all the usual powers of a corporation for public purposes as well as all powers that may now or hereafter be conferred by law.

[1967 c 164 § 9; 1937 c 72 § 50; RRS § 9663E-50. Formerly RCW 86.08.260, part.]

NOTES:

Purpose—Severability—1967 c 164: See notes following RCW 4.96.010.

Tortious conduct of political subdivisions, municipal corporations and quasi municipal corporations, liability for damages: Chapter 4.96 RCW.

86.09.151
General powers of districts.

(1) Said flood control districts shall have full authority to carry out the objects of their creation and to that end are authorized to acquire, purchase, hold, lease, manage, improve, repair, occupy, and sell real and personal property or any interest therein, either inside or outside the boundaries of the district, to enter into and perform any and all necessary contracts, to appoint and employ the necessary officers, agents and employees, to sue and be sued, to exercise the right of eminent domain, to levy and enforce the collection of special assessments and in the manner herein provided against the lands within the district, for district revenues, and to do any and all lawful acts required and expedient to carry out the purpose of this chapter.

(2) In addition to the powers conferred in this chapter and those in chapter 85.38 RCW, flood control districts may engage in activities authorized under RCW 36.61.020 for lake or beach management districts using procedures granted in this chapter and in chapter 85.38 RCW.

[2008 c 301 § 27; 1986 c 278 § 52; 1937 c 72 § 51; RRS § 9663E-51. Formerly RCW 86.08.260, part.]

NOTES:

Severability—1986 c 278: See note following RCW 36.01.010.

86.09.154
Sale, lease, use of water by district.

Duly created flood control districts, when maintaining and operating flood control works, shall have authority incidental thereto to lease, acquire, construct, operate and maintain appropriate instrumentalities for the use and sale or lease of water for any and all beneficial purposes and for the drainage, diking, or irrigation of lands upon the payment to the district of the reasonable cost of such service on a semiannual or monthly toll basis.

[1937 c 72 § 52; RRS § 9663E-52. Formerly RCW 86.08.260, part.]

86.09.157
Special assessment bonds authorized—Payment from income.

Said flood control districts shall also have authority to issue and sell special assessment bonds or notes of the district in accordance with chapter **85.38** RCW.

[**1986 c 278 § 40; 1937 c 72 § 53;** RRS § 9663E-53. Formerly RCW **86.08.790**, part.]

NOTES:

Severability—1986 c 278: See note following RCW **36.01.010**.

86.09.160
Power of district to act for United States.

Flood control districts created under the provisions of this chapter shall have authority to act as fiscal agent or other authority for the United States to make collections of money for or on behalf of the United States or any federal agency thereof in connection with the operations of said district, whereupon said district and the county treasurer for said district shall be authorized to act and to assume the duties and liabilities incident to such action and the district board shall have full power to do any and all things required by any statute now or hereafter enacted in connection therewith and to do all things required by the rules and regulations now or that may hereafter be established by any department or agency of the state or federal government in regard thereto.

[**1937 c 72 § 54;** RRS § 9663E-54. Formerly RCW **86.08.260**, part.]

86.09.163
Contracts with United States or state—Supervision of works.

The district board shall have authority to enter into any obligation or contract authorized by law with the United States or with the state of Washington for the supervision of the construction, for the construction, reconstruction, betterment, extension, purchase, operation or maintenance of the necessary works for the control of floods or for any other service furthering the objects for which said flood control district is created under the provisions of the law of the state of Washington or of the United States and all amendments or extensions thereof and the rules and regulations established thereunder.

[**1937 c 72 § 55;** RRS § 9663E-55. Formerly RCW **86.08.260**, part.]

86.09.166
Contracts with United States or state—Control, management of works—Contribution of funds.

Flood control districts created under this chapter shall have authority to enter into contracts with, and/or contribute funds to, the United States or any agency thereof, or with, and/or contribute funds to, the state of Washington, under any act of congress or of the state of Washington now in force or hereafter enacted for the assumption of the control and management of the works for such period as may be designated in the contract, or other cooperative arrangement.

[1937 c 72 § 56; RRS § 9663E-56. Formerly RCW 86.08.270, part.]

86.09.169
Contracts with United States or state—Bonds as security—Annual assessment and levy.

In case a contract has been or shall be hereafter made between the district and the United States, or any agency thereof, or with the state of Washington, as herein provided, bonds of the district may be deposited with the United States, or any agency thereof, or with the state of Washington, as payment or as security for future payment at not less than ninety percent of the par value, the interest on said bonds to be provided for by assessment and levy as in the case of bonds of the district sold to private persons and regularly paid to the United States, or any agency thereof, or to the state of Washington, to be applied as provided in such contract and if bonds of the district are not so deposited it shall be the duty of the board of directors to include as part of any levy or assessment against the lands of the district, an amount sufficient to meet each year all payments accruing under the terms of any such contract.

[1937 c 72 § 57; RRS § 9663E-57. Formerly RCW 86.08.270, part.]

86.09.172
Contracts with United States or state—When submission to electors required.

No contract, however, requiring the levy of assessments for more than one year shall be entered into by the district as above provided unless a proposition of entering into such a contract shall have first been submitted to the electors of the district as herein provided for the calling, noticing, conducting and canvassing of special district elections, and by said electors approved.

[1937 c 72 § 58; RRS § 9663E-58. Formerly RCW 86.08.270, part.]

86.09.175
Installment contracts—Approval.

Contracts entered into by districts for construction or for services or materials, may provide that payments shall be made in such monthly proportion of the contract price, as the board shall determine thereon, as the work progresses, or as the services or materials are furnished, on monthly estimates of the value thereof, approved by the state director. Before the district shall enter into any contract, the plans, specifications and form of contract therefor shall be approved by the state director.

[1937 c 72 § 59; RRS § 9663E-59. Formerly RCW 86.08.280, part.]

86.09.178
Construction contracts—Public bids, procedure.

Contracts for construction, or for labor or materials entering into the construction of any improvement authorized by the district shall be awarded at public bidding except as herein otherwise provided. A notice calling for sealed proposals shall be published in such newspaper or newspapers of general circulation as the board shall designate for a period of not less than two weeks (three weekly issues) prior to the day of the opening of the bids. Such proposals shall be accompanied by a certified check for such amount as the board shall decide upon, to guarantee a compliance with the bid and shall be opened in public at the time and place designated in the notice. The contract shall be awarded to the lowest and best responsible bidder: PROVIDED, That the board shall have authority to reject any or all bids, in which event they shall readvertise for bids and, when no satisfactory bid is then received and with the written approval of the director, may proceed to construct the works by force account.

[**1965 c 26 § 2; 1937 c 72 § 60;** RRS § 9663E-60. Formerly RCW **86.08.280**, part.]

86.09.181
Contractor's bond.

Any person, except the state of Washington and the United States, acting under the provisions of this chapter, to whom or to which a contract may have been awarded by the district for construction purposes, or for labor or materials entering therein when the total amount to be paid therefor exceeds one thousand dollars, shall enter into a bond to the state of Washington, with good and sufficient sureties, to be approved and filed with the state director, for one hundred percent of the contract price, conditioned for the faithful performance of said contract and with such further conditions as may be required by law.

[**1965 c 26 § 3; 1937 c 72 § 61;** RRS § 9663E-61. Formerly RCW **86.08.290**, part.]

NOTES:

*Contractor's bond: Chapter **39.08** RCW.*

86.09.196
Construction in parts or units—Liability for assessment.

The district shall have authority upon the adoption of a comprehensive plan of flood control with the approval of the state director to provide for the construction of the same partially and in parts or units and all the benefited lands in the district shall be liable for assessment to defray the costs of such partial construction or such parts or units until the entire plan has been completed and fully paid for.

[**1937 c 72 § 66;** RRS § 9663E-66. Formerly RCW **86.08.310**.]

86.09.202
Eminent domain—Authorized.

The taking and damaging of property or rights therein or thereto by a flood control district to construct an improvement or to fully carry out the purposes of its organization are hereby declared to be for a public use, and any district organized under the provisions of this chapter, shall have and exercise the power of

eminent domain to acquire any property or rights therein or thereto either inside or outside the operation of the district and outside the state of Washington, if necessary, for the use of the district.

[**1937 c 72 § 68;** RRS § 9663E-68. Formerly RCW **86.08.260**, part.]

86.09.205
Eminent domain—Procedure.

Flood control districts exercising the power of eminent domain shall proceed in the name of the district in the manner provided by law for the appropriation of real property or of rights therein or thereto, by private corporations, except as otherwise expressly provided herein.

[**1937 c 72 § 69;** RRS § 9663E-69. Formerly RCW **86.08.320**, part.]

NOTES:

*Eminent domain by private corporations generally: Chapter **8.20** RCW.*

86.09.208
Eminent domain—Consolidation of actions—Separate verdicts.

The district may at its option unite in a single action proceedings to condemn, for its use, property which is held by separate owners. Two or more condemnation suits instituted separately may also, in the discretion of the court, be consolidated upon motion of any interested party, into a single action. In such cases, the jury shall render separate verdicts for the different tracts of land.

[**1937 c 72 § 70;** RRS § 9663E-70. Formerly RCW **86.08.320**, part.]

86.09.211
Eminent domain—Damages, how determined—Judgment when damages exceed benefits.

The jury, or court if the jury be waived, in such condemnation proceedings shall find and return a verdict for the amount of damages sustained: PROVIDED, That the court or jury, in determining the amount of damages, shall take into consideration the special benefits, if any, that will accrue to the property damaged by reason of the improvement for which the land is sought to be condemned, and shall make special findings in the verdict of the gross amount of damages to be sustained and the gross amount of special benefits that will accrue. If it shall appear by the verdict of findings, that the gross damages exceed said gross special benefits, judgment shall be entered against the district, and in favor of the owner or owners of the property damaged, in the amount of the excess of damages over said benefits, and for the costs of the proceedings, and upon payment of the judgment to the clerk of the court for the owner or owners, a decree of appropriation shall be entered, vesting the title to the property appropriated in the district.

[**1937 c 72 § 71;** RRS § 9663E-71. Formerly RCW **86.08.330**, part.]

86.09.214
Eminent domain—Judgment, when benefits equal or exceed damages.

If it shall appear by the verdict that the gross special benefits equal or exceed the gross damages, judgment shall be entered against the district and in favor of the owner or owners for the costs only, and upon payment of the judgment for costs a decree of appropriation shall be entered vesting the title to the property in the district.

[**1937 c 72 § 72;** RRS § 9663E-72. Formerly RCW **86.08.330**, part.]

86.09.217
Eminent domain—Right to levy on other land not affected.

If the damages found in any condemnation proceedings are to be paid for from funds of the flood control district, no finding of the jury or court as to benefits or damages shall in any manner abridge the right of the district to levy and collect assessments for district purposes against the uncondemned lands situated within the district.

[**1937 c 72 § 73;** RRS § 9663E-73. Formerly RCW **86.08.340**, part.]

86.09.220
Eminent domain—Unpaid damages to be applied in satisfaction of levies—Deficiency assessments.

The damages thus allowed but not paid shall be applied pro tanto to the satisfaction of the levies made for such construction costs upon the lands on account of which the damages were awarded: PROVIDED, That nothing herein contained shall be construed to prevent the district from assessing the remaining lands of the owner or owners, so damaged, for deficiencies on account of the principal and interest on bonds and for other benefits not considered by the jury in the condemnation proceedings.

[**1937 c 72 § 74;** RRS § 9663E-74. Formerly RCW **86.08.340**, part.]

86.09.223
Eminent domain—Title and estate acquired.

The title acquired by the district in condemnation proceedings shall be the fee simple title or such lesser estate as shall be designated in the decree of appropriation.

[**1937 c 72 § 75;** RRS § 9663E-75. Formerly RCW **86.08.340**, part.]

86.09.226
Right of entry to make surveys and locate works.

The district board and its agents and employees shall have the right to enter upon any land, to make surveys and may locate the necessary flood control works and the line for canal or canals, dike or dikes and other instrumentalities and the necessary branches and parts for the same on any lands which may be deemed necessary for such location.

[**1937 c 72 § 76;** RRS § 9663E-76. Formerly RCW **86.08.350**.]

86.09.229
Crossing road or public utility—Notice, plan, cost, etc.

Whenever in the progress of the construction of the system of district improvement, it shall become necessary to construct a portion of such system across any public or other road or public utility, the district board shall serve notice in writing upon the public officers, corporation or person having charge of or controlling or owning such road or public utility, as the case may be, of the present necessity of such crossing, giving the location, kind, dimensions and requirement thereof, for the purpose of the system of improvement, and stating a reasonable time, to be fixed by the board, within which plans for such crossing must be filed for approval in case the public officer, corporation or person controlling or owning such road or public utility desire to design and construct such crossing. As soon as convenient, within the time fixed in the notice, the public officers, corporation or person shall, if they desire to construct such crossing, prepare and submit to the board for approval duplicate detailed plans and specifications for such crossing. Upon the return of such approved plans, the public officers, corporation or person controlling such road or public utility shall, within the time fixed by the board, construct such crossing in accordance with the approved plans. In case such public officers, corporation or person controlling or owning such road or public utility shall fail to file plans for such crossing within the time prescribed in the notice, the district board shall proceed with the construction of such crossing in such manner as will cause no unnecessary injury to or interference with such road or public utility. The cost of construction and maintenance of only such crossings or such portion of such cost as would not have been necessary but for the construction of the system of improvement shall be a proper charge against the district, and only the actual cost of such improvement constructed in accordance with the approved plans shall be charged against the district in the case of crossings constructed by others than the district. The amount of costs of construction allowed as a charge against the district shall be credited ratably on the assessments against the property on which the crossing is constructed if chargeable therewith, until the same is fully satisfied.

[**1965 c 26 § 5; 1937 c 72 § 77;** RRS § 9663E-77. Formerly RCW **86.08.360**.]

86.09.232
Right-of-way on state land, exception.

The right-of-way is hereby given, dedicated and set apart to locate, construct and maintain district works over and through any of the lands which are now or may hereafter be the property of the state of Washington, except lands of said state actually dedicated to public use.

[**1937 c 72 § 78;** RRS § 9663E-78. Formerly RCW **86.08.370**, part.]

86.09.235
Power to construct works inside or outside of district.

Flood control districts organized under the provisions of this chapter shall have authority to construct, operate and maintain any and all necessary flood control works inside and outside the boundaries of the district.

[**1937 c 72 § 79;** RRS § 9663E-79. Formerly RCW **86.08.370**, part.]

86.09.259
Board of directors—Number—Officers.

A flood control district shall be managed by a board of directors consisting of three members. The initial directors shall be appointed, and the elected directors elected, as provided in chapter **85.38** RCW. The directors shall elect a chair from their number and shall either elect one of their number, or appoint a voter of the district, as secretary to hold office at its pleasure and who shall keep a record of its proceedings.

[**2013 c 23 § 448; 1985 c 396 § 58; 1967 c 154 § 7; 1937 c 72 § 87;** RRS § 9663E-87. Formerly RCW **86.08.390**, part.]

NOTES:

Provisions cumulative: "The provisions of this act are cumulative with and shall not amend, repeal or supersede any other powers heretofore or hereafter granted such districts." [**1967 c 154 § 5.**]

86.09.265
Board of directors—Quorum—Majority vote required.

A majority of the directors shall constitute a quorum for the transaction of business, and in all matters requiring action by the board, there shall be a concurrence of at least a majority of the directors.

[**1937 c 72 § 89;** RRS § 9663E-89. Formerly RCW **86.08.205**, part.]

86.09.268
Board of directors—Powers and duties.

The board shall have the power and it shall be its duty to adopt a seal of the district, to manage and conduct the business affairs of the district, to employ and appoint such agents, engineers, attorneys, officers and employees as may be necessary, and prescribe their duties, to establish reasonable bylaws, rules and regulations for the government and management of affairs of the district, and generally to perform any and all acts necessary to carry out the purpose of the district organization.

[1937 c 72 § 90; RRS § 9663E-90. Formerly RCW 86.08.175, part.]

86.09.271
Board of directors—Location of district office—Change of location.

The office of the directors and principal place of business of the district shall be located, if possible, at some place within the district to be designated by the board. If a place convenient and suitable for conducting district business and public hearings required by this chapter cannot be found within the district, the office may be located in the county within which the major portion of district lands is situated. The office and place of business cannot thereafter be changed, except with the previous written consent of the county legislative authority of the county within which the major portion of the district is situated, and without passing a resolution to that effect at a previous regular meeting of the board, entered in the minutes thereof and without posting a notice of the change in a conspicuous public place at or near the place of business which is to be changed at least ten days prior thereto and by the previous posting of a copy of the notice for the same length of time at or near the new location of the office.

[1985 c 396 § 59; 1965 c 26 § 7; 1937 c 72 § 91; RRS § 9663E-91. Formerly RCW 86.08.200.]

86.09.274
Board of directors—Meetings—Change of date.

The directors shall hold a regular meeting at their office at least once a year, or more frequently, on the date or dates the board shall designate in their bylaws, and may adjourn any meeting from time to time as may be required for the proper transaction of business: PROVIDED, That the day of the regular meeting cannot be changed, except in the manner prescribed herein for changing the place of business of the district.

[1985 c 396 § 60; 1937 c 72 § 92; RRS § 9663E-92. Formerly RCW 86.08.205, part.]

86.09.277
Board of directors—Special meetings—When notice required—Authorized business.

Special meetings of the board may be called at any time by order of a majority of the directors. Any member not joining in said order shall be given, by United States mail, at least a three days' notice of such meeting, unless the same is waived in writing, which notice shall also specify the business to be transacted and the board at such special meeting shall have no authority to transact any business other than that specified in the notice, unless the transaction of any other business is agreed to in writing by all the members of the board.

[1937 c 72 § 93; RRS § 9663E-93. Formerly RCW 86.08.205, part.]

86.09.280
Board of directors—Meetings and records public—Printing of bylaws and rules.

All meetings of the directors must be public. All records of the board shall be open for the inspection of any elector of the district during business hours of the day in which any meeting of the board is held. The bylaws, rules and regulations of the board shall be printed in convenient form for distribution in the district.

[**1937 c 72 § 94;** RRS § 9663E-94. Formerly RCW **86.08.205**, part, and **86.08.210**, part.]

NOTES:

*Meetings of public officials declared public: Chapter **42.32** RCW.*

86.09.283
Board of directors—Compensation and expenses of members and employees.

The board of directors may each receive up to ninety dollars per day or portion thereof spent in actual attendance at official meetings of the board, or in performance of other official services or duties on behalf of the board. The board shall fix the compensation to be paid to the directors, secretary, and all other agents and employees of the district. Compensation for the directors shall not exceed eight thousand six hundred forty dollars in one calendar year. A director is entitled to reimbursement for reasonable expenses actually incurred in connection with such business, including subsistence and lodging, while away from the director's place of residence, and mileage for use of a privately owned vehicle in accordance with chapter **42.24** RCW.

Any director may waive all or any portion of his or her compensation payable under this section as to any month or months during his or her term of office, by a written waiver filed with the secretary as provided in this section. The waiver, to be effective, must be filed any time after the director's election and prior to the date on which the compensation would otherwise be paid. The waiver shall specify the month or period of months for which it is made.

The dollar thresholds established in this section must be adjusted for inflation by the office of financial management every five years, beginning July 1, 2008, based upon changes in the consumer price index during that time period. "Consumer price index" means, for any calendar year, that year's annual average consumer price index, for Washington state, for wage earners and clerical workers, all items, compiled by the bureau of labor and statistics, United States department of labor. If the bureau of labor and statistics develops more than one consumer price index for areas within the state, the index covering the greatest number of people, covering areas exclusively within the boundaries of the state, and including all items shall be used for the adjustments for inflation in this section. The office of financial management must calculate the new dollar threshold and transmit it to the office of the code reviser for publication in the Washington State Register at least one month before the new dollar threshold is to take effect.

A person holding office as commissioner for two or more special purpose districts shall receive only that per diem compensation authorized for one of his or her commissioner positions as compensation for attending an official meeting or conducting official services or duties while representing more than one of his or her districts. However, such commissioner may receive additional per diem compensation if approved by resolution of all boards of the affected commissions.

[**2007 c 469 § 12; 1998 c 121 § 13; 1991 c 349 § 24; 1985 c 396 § 61; 1965 c 26 § 8; 1937 c 72 § 95;** RRS § 9663E-95. Formerly RCW **86.08.175**, part, and **86.08.195**, part.]

86.09.286
Board of directors—Personal interest in contracts prohibited—Penalty—Officer may be employed.

No director or any other officer named in this chapter shall in any manner be interested, directly or indirectly, in any contract awarded or to be awarded by the board, or in the profits to be derived therefrom; and for any violation of this provision, such officer shall be deemed guilty of a misdemeanor, and such conviction shall work a forfeiture of his office, and he shall be punished by a fine not exceeding five hundred dollars, or by imprisonment in the county jail not exceeding six months, or by both fine and imprisonment: PROVIDED, That nothing in this section contained shall be construed to prevent any district officer from being employed by the district as foreman or as a day laborer: PROVIDED FURTHER, That this section shall have no application to any person who is a state employee as defined in RCW **42.52.010**.

[**1994 c 154 § 316; 1969 ex.s. c 234 § 35; 1937 c 72 § 96;** RRS § 9663E-96. Formerly RCW **86.08.215**.]

NOTES:

Effective date—1994 c 154: See RCW **42.52.904**.

*Ethics in public service act: Chapter **42.52** RCW.*

86.09.292
Board of directors—Chair of county commissioners may act when quorum not present.

In case any member of the district board is absent at the time of any regular monthly meeting of said board, and a quorum of said board cannot be obtained by reason of the absence of said member, it shall be the duty of the chair of the board of county commissioners of the county in which the office of the district board is located to act in place of said absent member, and the acts of the district board at said meeting shall be valid so far as a quorum is concerned and shall have the same effect as though said absent member were present and acting thereat.

[**2013 c 23 § 449; 1937 c 72 § 98;** RRS § 9663E-98. Formerly RCW **86.08.205**, part.]

86.09.301
Board of directors—Oath.

Every district officer, upon taking office, shall take and subscribe an official oath for the faithful discharge of the duties of his or her office during the term of his or her incumbency.

[**2013 c 23 § 450; 1985 c 396 § 62; 1937 c 72 § 101;** RRS § 9663E-101. Formerly RCW **86.08.195**, part.]

86.09.304
Bond of officer or employee handling funds.

Every district officer or employee handling any district funds shall execute a surety bond payable to the district in the sum of double the estimated amount of funds handled monthly, conditioned that the principal will strictly account for all moneys or credit received by him or her for the use of the district. Each bond and the amount thereof shall be approved by the county legislative authority of the county within which the major portion of the district is situated, and thereafter filed with the secretary of the district.

[**2013 c 23 § 451; 1985 c 396 § 63; 1937 c 72 § 102;** RRS § 9663E-102. Formerly RCW **86.08.220**, part.]

86.09.307
Bonds—Cost charged to district.

All official bonds executed by district officers under the provisions of this chapter shall be secured at the cost of the district.

[**1937 c 72 § 103;** RRS § 9663E-103. Formerly RCW **86.08.220**, part.]

86.09.310
Delivery of property to successor.

Every person, upon the expiration or sooner termination of his or her term of office as an officer of the district, shall immediately turn over and deliver, under oath, to his or her successor in office, all records, books, papers, and other property under his or her control and belonging to such office. In case of the death of any officer, his or her legal representative shall turn over and deliver such records, books, papers, and other property to the successor in office of such deceased person.

[**2013 c 23 § 452; 1937 c 72 § 104;** RRS § 9663E-104.]

86.09.313
Nearest county treasurer as ex officio district treasurer.

The county treasurer of any county in which lands within the flood control district are situated, whose office is nearest distant by public highway to the office of the district board and principal place of business of the district, shall be and is hereby constituted ex officio district treasurer, who shall collect all district assessments and shall keep all district funds required by law.

[**1937 c 72 § 105;** RRS § 9663E-105. Formerly RCW **86.08.225**, part.]

86.09.319
Treasurer's liability.

Any county treasurer collecting or handling funds of the district shall be liable upon his or her official bond and to criminal prosecution for malfeasance, misfeasance, or nonfeasance in office relative to any of his or her duties prescribed herein.

[**2013 c 23 § 453; 1937 c 72 § 107;** RRS § 9663E-107. Formerly RCW **86.08.230**.]

86.09.322
County treasurers to collect and remit assessments.

It shall be the duty of the county treasurer of each county, in which lands included within the operation of the district are located, to collect and receipt for all assessments levied as herein provided, and forward monthly all sums so collected to the ex officio district treasurer who shall place the same to the credit of the proper fund of the district.

[**1937 c 72 § 108;** RRS § 9663E-108. Formerly RCW **86.08.240**.]

86.09.325
Disbursement of funds by district treasurer.

The ex officio district treasurer shall pay out moneys collected or deposited with him or her in behalf of the district, or portions thereof, upon warrants issued by the county auditor against the proper funds of the districts, except the sums to be paid out of the bond fund for interest and principal payments on bonds.

[**2013 c 23 § 454; 1983 c 167 § 201; 1937 c 72 § 109;** RRS § 9663E-109. Formerly RCW **86.08.250**, part.]

NOTES:

Liberal construction—Severability—1983 c 167: See RCW **39.46.010** and note following.

86.09.328
Monthly report by district treasurer.

The said ex officio district treasurer shall report in writing on or before the fifteenth day of each month to the district board, the amount of money held by him or her, the amount in each fund, the amount of receipts for the month preceding in each fund, and the amount or amounts paid out of each fund, and said report shall be filed with the secretary of the board.

[**2013 c 23 § 455; 1937 c 72 § 110;** RRS § 9663E-110. Formerly RCW **86.08.250**, part.]

86.09.377
Voting rights.

Each qualified voter of a flood control district who owns more than ten acres of land within the district shall be entitled to two additional votes for each ten acres or major fraction thereof located within the district, up to a maximum total of forty votes for any voter, or in the case of community property, a maximum total of twenty votes per member of the marital community.

[**1991 c 349 § 4; 1985 c 396 § 22.**]

86.09.379
Elections—Informality not fatal.

No informality in conducting any election authorized by this chapter shall invalidate the same, if the election shall have been otherwise fairly conducted.

[**1937 c 72 § 127;** RRS § 9663E-127. Formerly RCW **86.08.165**.]

86.09.380
Special assessments—Budgets—Alternative methods.

RCW **85.38.140** through **85.38.170** constitute a mutually exclusive alternative method by which flood control districts in existence as of July 28, 1985, may measure and impose special assessments and adopt budgets. RCW **85.38.150** through **85.38.170** constitute the exclusive method by which flood control districts created after July 28, 1985, may measure and impose special assessments and adopt budgets.

[**1985 c 396 § 29.**]

86.09.382
Assessments—Presumption that land benefited by class—Benefit ratio basis of assessment.

It shall be and hereby is presumed that lands within flood control districts organized under the provisions of this chapter, shall be benefited in relation to their respective classes to be determined as herein provided, and that the relative ratios of benefits for said lands arising from their locations in said respective classes shall be the basis upon which the same shall be assessed to raise district revenues for any and all purposes now or hereafter authorized by law.

[**1937 c 72 § 128;** RRS § 9663E-128. Formerly RCW **86.08.450**, part.]

86.09.385
Assessments—Base map of lands within the district.

As a basis for the levy of all assessments authorized under this chapter, the county legislative authority of the county within which the major portion of the district is situated, soon after the creation of the district, shall cause to be prepared a base map of the lands within the district and deliver the same to the secretary of the district: PROVIDED, That said county legislative authority shall not be required to prepare said base map unless ample appropriation of funds for the purpose has been made.

[**1985 c 396 § 64; 1965 c 26 § 10; 1937 c 72 § 129;** RRS § 9663E-129. Formerly RCW **86.08.420**, part.]

86.09.388
Assessments—Appointment of appraisers—Determination of benefit ratios.

Upon receipt of the base map the board of directors of the district shall appoint a board of three appraisers subject to the written approval of the county legislative authority of the county within which the major portion of the district is situated, whose duty it shall be to determine the ratio of benefits which the several tracts of land shall receive with respect to each other from the organization and operation of the district and the construction and maintenance of the district works in accordance with the comprehensive plan therefor adopted by the directors of the district.

[**1985 c 396 § 65; 1965 c 26 § 11; 1937 c 72 § 130;** RRS § 9663E-130. Formerly RCW **86.08.420**, part, and **86.08.430**, part.]

86.09.391
Assessments—Appraisers' board, chair, and secretary—Compensation and expenses.

The board of appraisers shall elect a member as chair and the secretary of the district or his or her deputy shall be ex officio secretary of the board of appraisers. The appraisers shall receive such compensation and expenses as the board of directors of the district, with the approval of the county legislative authority of the county within which the major portion of the district is situated, shall determine, and which may forthwith be paid by the issuance of district warrants.

[**2013 c 23 § 456; 1985 c 396 § 66; 1937 c 72 § 131;** RRS § 9663E-131. Formerly RCW **86.08.420**, part.]

86.09.394
Assessments—Classification of lands according to benefits—Factors considered.

For the purpose of determining said ratios of benefits, said board of appraisers shall segregate the acreage of the respective lands within the district into such number of classes as in the sole judgment of the members of the board of appraisers shall fairly represent the manifest degrees of benefits, including benefits from better sanitation, easier accessibility, facility of drainage, promotion of land development as

well as from minimization of flood damages and from actual flood protection, accruing to the several lands from the organization and operation of the district and the construction and maintenance of the district works in accordance with the comprehensive plan therefor adopted by the directors of the district.

[**1937 c 72 § 132;** RRS § 9663E-132. Formerly RCW **86.08.440**, part.]

86.09.397
Assessments—Classification of lands by appraisers—Classes described.

Said board of appraisers shall have full authority and it shall be its duty to segregate and classify the acreage of the lands and subdivisions of the same with respect to their respective relative benefits received and to be received from the organization and operation of the district and the construction and maintenance of the district works in accordance with the comprehensive plan therefor adopted by the directors of the district. Those lands receiving the greatest benefits shall be placed in class No. 1; those lands receiving the next greatest benefits shall be placed in class No. 2, and so on down to the class of the least benefits. Those lands receiving no benefits shall be designated "nonbenefited."

[**1937 c 72 § 133;** RRS § 9663E-133. Formerly RCW **86.08.430**, part.]

86.09.400
Assessments—Percentage of benefits to lands as classed—Relative ratios.

Said board of appraisers shall have full authority and it shall be its duty to determine the percentage of benefits which the acreage of the lands in each class shall have with respect to the lands in class No. 1. Those lands falling in class No. 1 shall have the ratio or percentage of one hundred and those lands in the other respective classes shall be given such percentages of the lands in class No. 1 as said board of appraisers shall determine.

[**1937 c 72 § 134;** RRS § 9663E-134. Formerly RCW **86.08.430**, part.]

86.09.403
Assessments—Surveys, investigations to determine classification and benefits.

In determining the classification of said lands and their relative percentages of benefits, as herein provided, said board of appraisers shall consider the benefits of every kind accruing to said lands, as aforesaid, and shall make such investigation and surveys of the same as said board of appraisers shall deem necessary. The board of appraisers shall also examine and consider the data and records of the commission which fixed the boundaries of the district.

[**1937 c 72 § 135;** RRS § 9663E-135. Formerly RCW **86.08.440**, part.]

86.09.406
Assessments—Permanency of ratios of benefits as fixed.

The ratio of percentage determined by said board of appraisers for each class of lands aforesaid shall constitute the ratio of benefits of each acre or fraction thereof in its respective class for all district assessment purposes until changed in the manner herein provided.

[**1937 c 72 § 136;** RRS § 9663E-136. Formerly RCW **86.08.450**, part.]

86.09.409
Assessments—Alternative method of determining benefit ratios.

As an independent and alternative method to any other method herein authorized and subject to the prior written approval of the county legislative authority of the county within which the major portion of the district is situated, the ratio of benefits herein mentioned may be determined in their relation to the relative values of the respective benefited lands, including the improvements thereon, and the same shall be expressed on a relative percentage basis.

[**1985 c 396 § 67; 1937 c 72 § 137;** RRS § 9663E-137. Formerly RCW **86.08.460**, part.]

86.09.412
Assessments—Alternative method, percentage shall fix the class.

In case said alternative method of determining the ratio of benefits is adopted by any such district the percentage given a tract of land shall fix the class to which said tract belongs for assessment purposes.

[**1937 c 72 § 138;** RRS § 9663E-138. Formerly RCW **86.08.460**, part.]

86.09.415
Assessments—Determining relative values—General tax rolls.

In determining the relative values of such lands, including improvements thereon, the assessed valuation of the same for general tax purposes last equalized shall be construed to be prima facie correct: PROVIDED, That nothing herein contained shall be construed to prevent the fixing of values where none are shown on the general tax roll or the revision of such values on the general tax roll in any instance where in the sole judgment of the revising officers for the district the value for general tax purposes is manifestly and grossly erroneous in its relation to value of like property in the district similarly situated: AND PROVIDED FURTHER, That in any instance where any tract of land is protected or partially protected from floods and is financially supporting the works affording such protection the revising officers for the district shall take the value of such existing flood protection into consideration and give such land equitable credit therefor.

[**1937 c 72 § 139;** RRS § 9663E-139. Formerly RCW **86.08.460**, part.]

86.09.418
Assessments—Revision of benefit classification—Appointment of reappraisers—Effect of reexamination.

Upon completion of the control works of the district or of any unit thereof, the board of directors of the district may, with the written consent of the county legislative authority of the county within which the major portion of the district is situated, and upon petition signed by landowners representing twenty-five percent of the acreage of the lands in the district shall, appoint three qualified persons who shall be approved in writing by the county legislative authority, to act as a board of appraisers and who shall reconsider and revise and/or reaffirm the classification and relative percentages, or any part or parts thereof, in the same manner and with the same legal effect as that provided herein for the determination of such matters in the first instance: PROVIDED, That such reexamination shall have no legal effect on any assessments regularly levied prior to the order of appraisal by the reexamining board of appraisers.

[**1985 c 396 § 68; 1937 c 72 § 140;** RRS § 9663E-140. Formerly RCW **86.08.470**, part.]

86.09.421
Assessments—Descriptions of lands as appraised and classified—Map and filing thereof.

When said board of appraisers shall have made said determination of the ratio of benefits, as aforesaid, all the lands within the district shall be classified and properly designated and shall be described in terms of government sections, and fractions thereof in designated townships and ranges, on the base map, and the board of appraisers shall file said map with the secretary of the district: PROVIDED, That platted lands may be described in terms of the recorded plat thereof.

[**1937 c 72 § 141;** RRS § 9663E-141. Formerly RCW **86.08.470**, part.]

86.09.424
Assessments—Hearing on objections to assessment ratios—Time—Place.

The secretary of the district shall immediately fix a time for hearing objections to the assessment ratios determined by said board of appraisers as shown on said base map. The meeting shall be at the office of the district board and principal place of business of the district and shall be held not less than twenty-five, nor more than thirty-five, days from the date of the first publication of the notice of the hearing.

[**1937 c 72 § 142;** RRS § 9663E-142. Formerly RCW **86.08.475**, part.]

86.09.427
Assessments—Notice of hearing, publication.

Notice of said hearing shall be given by the secretary of the district by causing a copy of the same to be published for three consecutive weekly issues in a newspaper of general circulation, to be selected by said secretary, published in each of the counties in which any part of the district is located.

[**1937 c 72 § 143;** RRS § 9663E-143. Formerly RCW **86.08.475**, part.]

86.09.430
Assessments—Contents of notice of hearing.

Said notice of hearing on said determination of assessment ratios shall state that the base assessment map designating the classes in which the lands in the district have been placed for assessment purposes on the ratios authorized by law, has been prepared by the board of appraisers and is on file at the office of the district board and may be inspected at any time during office hours; that a hearing on said map will be held before the county legislative authority at the office of the district board on . . . . . ., the . . . . day of . . . . . ., ..., at the hour of . . . . . o'clock (naming the time), where any person may appear and present such objections, if any, he or she may have to said map, and shall be signed by the secretary of the district.

[**2013 c 23 § 457; 1986 c 278 § 43; 1937 c 72 § 144;** RRS § 9663E-144. Formerly RCW **86.08.480**.]

NOTES:

Severability—1986 c 278: See note following RCW **36.01.010**.

86.09.433
Assessments—Conduct of hearing—Order.

At the time set for said hearing the county legislative authority shall be present at the place designated in the notice and if it appears that due notice of the hearing has been given, shall proceed to hear such objections to the base map as shall be presented and shall hear all pertinent evidence that may be offered. The county legislative authority shall have authority to adjourn said hearings from time to time to study the record and evidence presented, to make such independent investigation as it shall deem necessary and to correct, modify, or confirm the things set out on said base map or any part thereof and to determine all questions concerning the matter and shall finally make an order confirming said map with such substitutions, changes, or corrections, if any, as may have been made thereon, which order shall be signed by the chair of the county legislative authority and attached to said map.

[**2013 c 23 § 458; 1985 c 396 § 69; 1937 c 72 § 145;** RRS § 9663E-145. Formerly RCW **86.08.485**, part.]

86.09.439
Assessments—Conclusiveness of base assessment map.

Upon the signing of said order by said county legislative authority and the attachment of the same to said base assessment map, said base assessment map and all things set out on the face thereof shall be

conclusive in all things upon all parties, unless appealed from to the superior court in the manner and within the time herein provided.

[**1986 c 278 § 44; 1937 c 72 § 147;** RRS § 9663E-147. Formerly RCW **86.08.485**, part.]

NOTES:

Severability—1986 c 278: See note following RCW **36.01.010**.

86.09.442
Assessments—Copies of base assessment map to be filed with county assessors.

When confirmed by order of said county legislative authority as aforesaid, or by order of said county legislative authority making any changes decreed by the court on appeal to the superior court, it shall be the duty of the secretary of the district to prepare a correct copy of so much of said base assessment map as includes the lands in the district situated in each county in which the lands in the district are situated, with the assessment classes and ratios properly designated thereon, and file the same with the respective county assessors of said counties for record therein.

[**1985 c 396 § 70; 1937 c 72 § 148;** RRS § 9663E-148. Formerly RCW **86.08.500**, part.]

86.09.445
Assessments—Levies to be made according to base assessment map.

Assessments made against the respective lands in the district to carry out any of the purposes of this chapter shall be levied in accordance with their respective classifications and in proportion to their respective ratios of benefits, set out on the base assessment map.

[**1937 c 72 § 149;** RRS § 9663E-149. Formerly RCW **86.08.500**, part.]

86.09.448
Assessments—Appeal to courts.

Any person, firm, or corporation feeling aggrieved at any determination by said county legislative authority of the classification or relative percentage of his or her or its lands, aforesaid, may have the same reviewed by a proceeding for that purpose, in the nature of an appeal, initiated in the superior court of the county in which the land affected is situated. The matter shall be heard and tried by the court and shall be informal and summary but full opportunity to be heard and present evidence shall be given before judgment is pronounced.

[**2013 c 23 § 459; 1985 c 396 § 71; 1937 c 72 § 150;** RRS § 9663E-150. Formerly RCW **86.08.490**, part.]

86.09.451
Assessments—Notice of appeal.

No such appeal shall be entertained by the court unless notice of the same containing a statement of the substance of the matter complained of and the manner in which the same injuriously affects the appellant's interests shall have been served personally or by registered mail, upon the county legislative authority of the county within which the major portion of the district is situated, and upon the secretary of the district, within twenty days following the date of the determination appealed from.

[**1985 c 396 § 72; 1937 c 72 § 151;** RRS § 9663E-151. Formerly RCW **86.08.490**, part.]

86.09.454
Assessments—Appeal—Stay bond, when required.

No bond shall be required unless a stay is desired, and an appeal shall not be a stay, unless within five days following the service of notice of appeal aforesaid, a bond shall be filed in an amount to be fixed by the court and with sureties satisfactory to the court, conditioned to perform the judgment of the court.

[**1937 c 72 § 152;** RRS § 9663E-152. Formerly RCW **86.08.490**, part.]

86.09.457
Assessments—Civil practice to apply—Costs, liability of district.

Costs shall be paid as in civil cases brought in the superior court, and the practices in civil cases shall apply: PROVIDED, That any costs awarded against said county legislative authority shall be in its official capacity only and shall be against and paid by the district.

[**1985 c 396 § 73; 1937 c 72 § 153;** RRS § 9663E-153. Formerly RCW **86.08.495**, part.]

NOTES:

*Civil practice generally: Title **4** RCW; Rules of court.*

*Costs, generally: Chapter **4.84** RCW.*

86.09.460
Assessments—Appeal from superior to supreme court.

An appeal shall lie from the judgment of the superior court as in other civil cases.

[**1937 c 72 § 154;** RRS § 9663E-154. Formerly RCW **86.08.495**, part.]

86.09.463
Assessments—County legislative authority's determination deemed prima facie correct on appeal.

In all said appeals from the determination of said county legislative authority, as herein provided, said determination and all parts thereof shall be deemed to be prima facie correct.

[**1985 c 396 § 74; 1937 c 72 § 155;** RRS § 9663E-155. Formerly RCW **86.08.490**, part.]

86.09.466
Assessments—District budget—Approval—Basis for assessment roll.

The secretary of the district on or before the first day of November in each year shall estimate the amount of money necessary to be raised for any and all district purposes during the ensuing year based upon a budget furnished him or her by the district board and submit the same to the county legislative authority of the county within which the major portion of the district is situated for its suggestions, approval, and revision and upon the approval of the budget by said county legislative authority, either as originally submitted or as revised, the secretary shall prepare an assessment roll with appropriate headings in which must be listed all the lands in each assessment classification shown on the base assessment map.

[**2013 c 23 § 460; 1985 c 396 § 75; 1937 c 72 § 156;** RRS § 9663E-156. Formerly RCW **86.08.510**, part.]

86.09.469
Assessments—Assessment roll, contents—Headings.

On such assessment roll in separate columns, must be specified under the appropriate headings:

(1) The reputed owner of the property assessed. If the reputed owner is not known to the secretary, the reputed owner may be stated as "unknown";

(2) The description of the land of the reputed or unknown owner sufficiently definite to identify the land. Where the land is described in the records of the county assessor's office in terms of the assessor's plat tax number, such designation shall be sufficient description of such land on the district's assessment roll. In instances where the district has adopted the alternative method of determining the ratio of benefits as herein authorized the secretary shall annually revise and specify in an appropriate column on the roll the cash value of the respective tracts of lands, including improvements thereon, described on the roll;

(3) The estimated assessable acreage of such respective lands;

(4) The designated classification and their respective ratios of benefits shown on the base assessment map in which the land is situated, with the per acre final ratio or percentage upon which every acre or fraction thereof of the respective lands are to be charged with assessments;

(5) The total amount of the assessment in dollars and cents against each tract of land.

[**1937 c 72 § 157;** RRS § 9663E-157. Formerly RCW **86.08.520**, part.]

86.09.472
Assessments—Margin for anticipated delinquencies.

For the purpose of apportioning the amount of money to be raised by assessment, to the several tracts of land in accordance with their respective classifications, the secretary shall add to the amount of money to be raised fifteen percent thereof for anticipated delinquencies.

[**1937 c 72 § 158;** RRS § 9663E-158. Formerly RCW **86.08.510**, part.]

86.09.475
Assessments—How calculated.

In calculating the amount of assessments to be charged against the respective tracts of land included in the annual district assessment roll, the per acre charge against the lands in class No. 1 on the base map shall be taken as one hundred percent and the per acre charge against the lands in other classes shall be reckoned on their respective final per acre percentages of the per acre assessment against the lands in said class No. 1.

[**1937 c 72 § 159;** RRS § 9663E-159. Formerly RCW **86.08.530**.]

86.09.478
Assessments—Omitted property may be back-assessed.

Any property which may have escaped assessment for any year or years, shall in addition to the assessment for the then current year, be assessed for such year or years with the same effect and with the same penalties as are provided for such current year and any property delinquent in any year may be directly assessed during the current year for any expenses caused the district on account of such delinquency.

[**1937 c 72 § 160;** RRS § 9663E-160. Formerly RCW **86.08.550**.]

86.09.481
Assessments—Lands in more than one county.

Where the district embraces lands lying in more than one county the assessment roll shall be so arranged that the lands lying in each county shall be segregated and grouped according to the county in which the same are situated.

[**1937 c 72 § 161;** RRS § 9663E-161. Formerly RCW **86.08.520**, part.]

86.09.484
Equalization of assessments—Notice and time for meeting of board of

equalization.

Upon completion of the assessment roll the secretary shall deliver the same to the district board and immediately give notice thereof and of the time the board of directors, acting as a board of equalization will meet to equalize assessments, by publication in a newspaper published in each of the counties comprising the district. The time fixed for the meeting shall not be less than twenty nor more than thirty days from the first publication of the notice, and in the meantime the assessment roll must remain in the office of the secretary for the inspection of all persons interested.

[**1937 c 72 § 162;** RRS § 9663E-162. Formerly RCW **86.08.540**, part.]

86.09.487
Equalization of assessments—Meeting of directors as board, length of time—Completion of roll.

Upon the day specified in the notice required by the preceding section for the meeting, the board of directors, which is hereby constituted a board of equalization for that purpose, shall meet and continue in session from day to day as long as may be necessary, not to exceed ten days, exclusive of Sundays, to hear and determine such objections to the said assessment roll as may come before them; and the board may decide the same. The secretary of the board shall be present during its session, and note all changes made at said hearing, and on or before the fifteenth day of January thereafter shall have the assessment roll completed as finally equalized by the board.

[**1937 c 72 § 163;** RRS § 9663E-163. Formerly RCW **86.08.540**, part.]

86.09.489
Levy where total assessment less than two dollars.

When the assessment roll is completed as finally equalized by the board of directors and the total assessment against any tract or contiguous tracts owned by one person or corporation is less than two dollars, the county treasurer shall levy such a minimum amount of two dollars against such tract or contiguous tracts.

[**1965 c 26 § 13.**]

86.09.490
Assessment lien—Priority.

The assessment upon real property shall be a lien against the property assessed, from and after the first day of January in the year in which the assessment becomes due and payable, but as between grantor and grantee such lien shall not attach until the county treasurer has completed the property tax roll for the current year's collection and provided the notification required by RCW **84.56.020**. The lien shall be paramount and superior to any other lien theretofore or thereafter created, whether by mortgage or otherwise, except a lien for undelinquent flood control district assessments, diking or drainage, or diking or

drainage improvement, district assessments and for unpaid and outstanding general ad valorem taxes, and such lien shall not be removed until the assessments are paid or the property sold for the payment thereof as provided by law.

[**2009 c 350 § 3; 1937 c 72 § 164;** RRS § 9663E-164. Formerly RCW **86.08.560**, part.]

86.09.493
Payment of assessment—Date of delinquency—Notice to pay—Assessment book—Statements.

On or before the fifteenth day of January in each year the secretary must deliver the assessment roll or the respective segregations thereof to the county treasurer of each respective county in which the lands described are located, with a statement of the amounts and/or percentages of the collections on said roll which shall be apportioned to the respective district funds, and said assessments shall become due and payable at the time or times general taxes accrue payable.

One-half of all assessments on said roll shall become delinquent on the first day of June following the filing of the roll unless said one-half is paid on or before the thirty-first day of May of said year, and the remaining one-half shall become delinquent on the first day of December following, unless said one-half is paid on or before the thirtieth day of November. All delinquent assessments shall bear interest at the rate of ten percent per annum from the date of delinquency until paid.

Within twenty days after the filing of the assessment roll as aforesaid the respective county treasurers shall each publish a notice in a newspaper published in their respective counties in which any portion of the district may lie, that said assessments are due and payable at the office of the county treasurer of the county in which said land is located and will become delinquent unless paid as herein provided. Said notice shall state the dates of delinquency as fixed in this chapter and the rate of interest charged thereon and shall be published once a week for four successive weeks and shall be posted within said period of twenty days in some public place in said district in each county in which any portion of the district is situated.

Upon receiving the assessment roll, the county treasurer shall prepare therefrom an assessment book in which shall be written the description of the land as it appears in the assessment roll, the name of the owner or owners where known, and if assessed to the unknown owners, then the word "unknown", and the total assessment levied against each tract of land. Proper space shall be left in said book for the entry therein of all subsequent proceedings relating to the payment and collection of said assessments.

Upon payment of any assessment the county treasurer must enter the date of said payment in said assessment book opposite the description of the land and the name of the person paying, and give a receipt to such person specifying the amount of the assessment and the amount paid with the description of the property assessed.

It shall be the duty of the county treasurer of the county in which any land in the district is located to furnish upon request of the owner, or any person interested, a statement showing any and all assessments levied as shown by the assessment roll in his or her office upon land described in such request, and all statements of general taxes covering any land in the district shall be accompanied by a statement showing the condition of district assessments against such lands: PROVIDED, That the failure of the county treasurer to render any statement herein required of him or her shall not render invalid any assessments made by any district or proceedings had for the enforcement and collection of district assessments pursuant to this chapter.

[**2013 c 23 § 461; 1937 c 72 § 165;** RRS § 9663E-165. Formerly RCW **86.08.540**, part, **86.08.560**, part, and **86.08.570**.]

86.09.496
Delinquency list—Posting and publication.

On or before the thirty-first day of December of each year, the county treasurer of the county in which the land is located shall cause to be posted the delinquency list which must contain the names of persons to whom the property is assessed and a description of the property delinquent and the amount of the assessment and costs due, opposite each name and description.

He or she must append to and post with the delinquency list a notice that unless the assessments delinquent, together with costs and accrued interest, are paid, the real property upon which such assessments are a lien will be sold at public auction. The said notice and delinquent list shall be posted at least twenty days prior to the time of sale. Concurrent as nearly as possible with the date of the posting aforesaid, the said county treasurer shall publish the location of the place where said notice is posted and in connection therewith a notice that unless delinquent assessments together with costs and accrued interest are paid, the real property upon which such assessments are a lien will be sold at public auction. Such notice must be published once a week for three successive weeks in a newspaper of general circulation published in the county within which the land is located; but said notice of publication need not comprise the delinquent list where the same is posted as herein provided. Both notices must designate the time and place of sale. The time of sale must not be less than twenty-one nor more than twenty-eight days from the date of posting and from the date of the first publication of the notice thereof, and the place must be at some point designated by the treasurer.

[**2013 c 23 § 462; 1937 c 72 § 166;** RRS § 9663E-166. Formerly RCW **86.08.580**.]

86.09.499
Sale for delinquent assessments—Postponement.

The treasurer of the county in which the land is situated shall conduct the sale of all lands situated therein and must collect in addition to the assessment due as shown on the delinquent list the costs and expenses of sale and interest at the rate of ten percent per annum from the date or dates of delinquency as hereinbefore provided. On the day fixed for the sale, or some subsequent day to which he or she may have postponed it, and between the hours of ten o'clock a.m. and three o'clock p.m., the county treasurer making the sale must commence the same, beginning at the head of the list, and continuing alphabetically, or in the numerical order of the parcels, lots, or blocks, until completed. He or she may postpone the day of commencing the sale, or the sale from day to day, by giving oral notice thereof at the time of the postponement, but the sale must be completed within three weeks from the first day fixed.

[**2013 c 23 § 463; 1937 c 72 § 167;** RRS § 9663E-167. Formerly RCW **86.08.590**.]

86.09.502
Sale for delinquent assessments—How conducted—Certificate of sale—District as purchaser—Fee.

The owner or person in possession of any real estate offered for sale for assessments due thereon may designate in writing to the county treasurer, by whom the sale is to be made, and prior to the sale,

what portion of the property he or she wishes sold, if less than the whole; but if the owner or possessor does not, then the treasurer may designate it, and the person who will take the least quantity of the land, or in case an undivided interest is assessed, then the smallest portion of the interest, and pay the assessment and costs due, including one dollar to the treasurer for duplicate of the certificate of sale, is the purchaser. The treasurer shall account to the district for said one dollar. If the purchaser does not pay the assessment and costs before ten o'clock a.m. the following day, the property must be resold on the next sale day for the assessments and costs. In case there is no purchaser in good faith for the same on the first day that the property is offered for sale, and if there is no purchaser in good faith when the property is offered thereafter for sale, the whole amount of the property assessed shall be struck off to the district as the purchaser, and the duplicate certificate shall be delivered to the secretary of the district, and filed by him or her in the office of the district. No charge shall be made for the duplicate certificate where the district is the purchaser, and in such case the treasurer shall make an entry, "Sold to the district", and he or she will be credited with the amount thereof in settlement. The district, as a purchaser at said sale, shall be entitled to the same rights as a private purchaser, and may assign or transfer the certificate of sale upon the payment of the amount which would be due if redemption were being made by the owner. If no redemption is made of land for which the district holds a certificate of purchase, the district will be entitled to receive the treasurer's deed therefor in the same manner as a private person would be entitled thereto.

After receiving the amount of assessments and costs, the county treasurer must make out in duplicate a certificate, dated on the day of sale, stating (when known) the names of the persons assessed, a description of the land sold, the amount paid therefor, that it was sold for assessments, giving the amount and the year of assessment, and specifying the time when the purchaser will be entitled to a deed. The certificate must be signed by the treasurer making the sale and one copy delivered to the purchaser, and the other filed in the office of the county treasurer of the county in which the land is situated: PROVIDED, That upon the sale of any lot, parcel, or tract of land not larger than an acre, the fee for a duplicate certificate shall be twenty-five cents and in case of a sale to a person or a district, of more than one parcel or tract of land, the several parcels or tracts may be included in one certificate.

[**2013 c 23 § 464; 1937 c 72 § 168;** RRS § 9663E-168. Formerly RCW **86.08.600**.]

86.09.505
Sale for delinquent assessments—Entries in assessment book—Book open to inspection—Lien vested in purchaser.

The county treasurer, before delivering any certificate must file the same and enter in the assessment book opposite the description of the land sold, the date of sale, the purchaser's name and the amount paid therefor, and must regularly number the description on the margin of the assessment book and put a corresponding number on each certificate. Such book must be open to public inspection without fee during office hours, when not in actual use.

On filing the certificate of sale as provided in the preceding paragraph, the lien of the assessment vests in the purchaser and is only divested by the payment to the county treasurer making the sale of the purchase money and interest at the rate of ten percent per annum, from the day of sale until redemption for the use of the purchaser.

[**1937 c 72 § 169;** RRS § 9663E-169. Formerly RCW **86.08.610**.]

86.09.508
Sale for delinquent assessments—Redemption, when and how made.

A redemption of the property sold may be made by the owner or any person on behalf and in the name of the owner or by any party in interest at any time before deed issues, by paying the amount of the purchase price and interest as in this chapter provided, and the amount of any assessments which such purchaser may have paid thereon after purchase by him or her and during the period of redemption in this section provided, together with like interest on such amount, and if the district is the purchaser, the redemptioner shall not be required to pay the amount of any district assessment levied subsequent to the assessment for which said land was sold, but all subsequent and unpaid assessments levied upon said land to the date of such redemption shall remain a lien and be payable and the land be subject to sale and redemption at the times applicable to such subsequent annual district assessment. Redemption must be made in legal tender, as provided for the collection of state and county taxes, and the county treasurer must credit the amount paid to the person named in the certificate and pay it on demand to such person or his or her assignees. No redemption shall be made except to the county treasurer of the county in which the land is situated.

[**2013 c 23 § 465; 1937 c 72 § 170;** RRS § 9663E-170. Formerly RCW **86.08.620**.]

86.09.511
Sale for delinquent assessments—Entry of redemption—Deed on demand if not redeemed in two years—Fee.

Upon completion of redemption, the county treasurer to whom redemption has been made shall enter the word "redeemed", the date of redemption and by whom redeemed on the certificate and on the margin of the assessment book where the entry of the certificate is made. If the property is not redeemed within two years, after the fifteenth day of January of the year in which such property was sold, the county treasurer of the county in which the land sold is situated must thereafter, upon demand of the owner of the certificate of sale, make to the purchaser, or his or her assignees a deed of the property, reciting in the deed substantially the matters contained in the certificate, and that no person redeemed the property during the time allowed by law for its redemption. The treasurer shall receive from the purchaser, for the use of the district, one dollar for making such deed: PROVIDED, If redemption is not made of any lot, parcel, or tract of land not larger than one acre, the fee for a deed shall be twenty-five cents and when any person or district holds a duplicate certificate covering more than one tract of land, the several parcels, or tracts of lands, mentioned in the certificate may be included in one deed.

[**2013 c 23 § 466; 1937 c 72 § 171;** RRS § 9663E-171. Formerly RCW **86.08.630**.]

86.09.514
Sale for delinquent assessments—Effect and validity of deed.

The matter recited in the certificate of sale must be recited in the deed, and such deed duly acknowledged or proved is prima facie evidence that:

First. The property was assessed as required by law.

Second. The property was equalized as required by law.

Third. That the assessments were levied in accordance with law.

Fourth. The assessments were not paid.

Fifth. At a proper time and place the property was sold as prescribed by law and by the proper officers.

Sixth. The property was not redeemed.

Seventh. The person who executed the deed was the proper officer.

Such deed, duly acknowledged or proved, is (except as against actual fraud) conclusive evidence of the regularity of all the proceedings from the assessments by the secretary, inclusive, up to the execution of the deed. The deed conveys to the grantee the absolute title to the lands described therein, free from all incumbrances except the lien of outstanding general ad valorem taxes and of unmatured special assessments. When title to the land is in the United States or this state, such deed shall be prima facie evidence of the right of possession.

[**1937 c 72 § 172;** RRS § 9663E-172. Formerly RCW **86.08.640**, part.]

86.09.517
Sale for delinquent assessments—Mistake, misnomer does not affect sale.

When land is sold for assessments correctly imposed, as the property of a particular person, no misnomer of the owner or supposed owner, or other mistake relating to the ownership thereof, affects the sale or renders it void or avoidable.

[**1937 c 72 § 173;** RRS § 9663E-173. Formerly RCW **86.08.640**, part.]

86.09.520
District lands exempt from general taxes—Leasing, application of proceeds.

All unsold lands owned by the district shall be exempt from general ad valorem taxes while title to same remains in the district. The district shall not be authorized to lease any of its lands for a term longer than one year, and the proceeds for such lease shall first be applied on account of outstanding ad valorem tax liens, if any.

[**1937 c 72 § 174;** RRS § 9663E-174. Formerly RCW **86.08.650**.]

86.09.523
Liability of city, town or subdivision for benefits to roads, streets, or sewer systems.

Whenever any system of improvement constructed under the provisions of this chapter results in benefit to the whole or any part of a public street or road, street or road bed or track thereof within the district, or will facilitate the construction or maintenance of any sewer system in any city or town within the district, the city, town or subdivision or any of them responsible for the maintenance of said public road, street or sewer, shall be liable for assessment for any or all district purposes.

[**1937 c 72 § 175;** RRS § 9663E-175. Formerly RCW **86.08.660**, part.]

86.09.526
Liability of public and private lands for benefits.

All school, granted, and other state lands, and lands owned by the United States, when legally possible, and all county, city and other municipally owned property, not used for governmental purposes, and all privately owned lands within the corporate limits of any county, school district, city or other municipal corporation included within the operation of the district and benefited by the district improvement, shall be liable for assessment as provided herein for other property.

[**1937 c 72 § 176;** RRS § 9663E-176. Formerly RCW **86.08.660**, part.]

86.09.529
Assessment payment by city, county, subdivision—Payment by state for highway benefit.

Assessments charged to any city, town, county, or subdivision thereof shall be paid from any fund of the city, town, county, or subdivision, as its governing body determines. Assessments charged on account of benefits to state highways shall be approved by the secretary of transportation and shall be paid from the state motor vehicle fund.

[**1984 c 7 § 379; 1937 c 72 § 177;** RRS § 9663E-177. Formerly RCW **86.08.660**, part.]

NOTES:

Severability—1984 c 7: See note following RCW **47.01.141**.

86.09.532
District funds—Created.

There are hereby created for district purposes the following special funds: (1) Expense fund, (2) surplus fund, (3) suspense fund, (4) general bond fund, (5) utility bond fund, (6) contract fund.

[**1937 c 72 § 178;** RRS § 9663E-178. Formerly RCW **86.08.670**.]

86.09.535
District funds—Expense fund—Composition—Use.

All assessments collected for administrative, operative and maintenance purposes, all money collected and not otherwise provided for, and any transfers authorized by law from other funds made specifically to the fund, shall be placed by the county treasurer, ex officio treasurer of the district, in the expense fund, and it shall be the duty of the district board to make ample provision for the requirements of this fund by the levy of assessments or by the use of other revenues of the district.

[1937 c 72 § 179; RRS § 9663E-179. Formerly RCW 86.08.675.]

86.09.538
District funds—Surplus fund—Composition—Use.

The district shall have authority at its option of turning any district revenues not probably required during the current year to the surplus fund by adopting a resolution to that effect and filing a copy of the same with the county treasurer in charge of such fund. For this purpose unrequired moneys may be transferred from other funds, except from either of the two bond funds.

Assessments, not exceeding twenty percent of the total levy for a given year, may be levied for the purpose of supplying moneys for the surplus fund.

The surplus fund may be used for any district purpose authorized by law, by resolution of the board of directors specifying said purpose, and the duration of such use.

[1937 c 72 § 180; RRS § 9663E-180. Formerly RCW 86.08.680.]

86.09.541
District funds—Suspense fund—Composition—Use.

All district indebtedness, not otherwise provided for, which has not been or will not be paid on substantially a cash basis, shall be paid from the suspense fund and it shall be the duty of the district board to make ample provision for the requirements of this fund by the levy of assessments or by the use of other revenues of the district, authorized by law to be used for this purpose.

[1937 c 72 § 181; RRS § 9663E-181. Formerly RCW 86.08.685.]

86.09.544
District funds—General bond fund—Composition—Use.

Moneys in the general bond fund shall be used exclusively for the payment of outstanding general obligation bonds of the district with interest thereon according to their terms. It shall be the duty of the district board to make ample provision for the requirements of this fund by the levy of assessments and/or by the use of other district revenues, authorized by law to be used for this purpose.

[1937 c 72 § 182; RRS § 9663E-182. Formerly RCW 86.08.695.]

86.09.547
District funds—Utility bond fund—Composition—Use.

Revenues from the use, sale or lease of water and/or other service furnished by the district to the extent pledged to the payment of district utility bonds, as herein provided, shall be placed in the utility bond fund and used exclusively for the payment of such bonds with interest according to their terms.

[1937 c 72 § 183; RRS § 9663E-183. Formerly RCW 86.08.700.]

86.09.550
District funds—Contract fund—Composition—Use.

The proceeds from bond sales and revenues from other sources authorized by law to be used for district contract purposes shall be placed in the contract fund and shall be used for the purposes for which the bonds were issued or for which any other contract was entered into by the district.

[1937 c 72 § 184; RRS § 9663E-184. Formerly RCW 86.08.690.]

86.09.553
District funds—Custody and disbursement.

All district moneys shall be paid to the county treasurer having charge of the district funds and by that officer disbursed in the manner provided by law.

[1937 c 72 § 185; RRS § 9663E-185. Formerly RCW 86.08.710, part.]

86.09.556
Claims against district.

Any claim against the district shall be presented to the district board for allowance or rejection. Upon allowance, the claim shall be attached to a voucher verified by the claimant or his or her agent and approved by the chair of the board and countersigned by the secretary and directed to the county auditor of the county in which the office of the district treasurer is located, for the issuance of a warrant against the proper fund of the district in payment of said claim.

[2013 c 23 § 467; 1937 c 72 § 186; RRS § 9663E-186. Formerly RCW 86.08.720, part.]

86.09.559
Claims against district—For administrative expenses, cost, maintenance—Payroll.

Claims against the district for administrative expenses and for the costs of operation and maintenance of the system of improvement, shall be allowed by the district board and presented to the county auditor with proper vouchers attached for the issuance of warrants against the expense fund of the district. The payroll of the district shall be verified by the foreman in charge and may be presented in one claim for the individual claimants involved. The warrants for said claim shall be issued in the name of the individual claimants, but may be receipted for by said foreman.

[1937 c 72 § 187; RRS § 9663E-187. Formerly RCW 86.08.720, part.]

86.09.562
District funds paid by warrant—Exception.

Said county treasurer shall pay out the moneys received or deposited with him or her or any portion thereof upon warrants issued by the county auditor of the same county of which the district treasurer is an officer against the proper funds of the district except the sums to be paid out of the special funds for interest and principal payments on bonds or notes.

[**2013 c 23 § 468; 1986 c 278 § 45; 1983 c 167 § 202; 1937 c 72 § 188;** RRS § 9663E-188. Formerly RCW **86.08.710**, part.]

NOTES:

Severability—1986 c 278: See note following RCW **36.01.010**.

Liberal construction—Severability—1983 c 167: See RCW **39.46.010** and note following.

86.09.565
Warrants paid in order of issuance.

Warrants drawn on any district fund shall be paid from any moneys in said fund in the order of their issuance.

[**1937 c 72 § 189;** RRS § 9663E-189. Formerly RCW **86.08.710**, part.]

86.09.592
Utility revenue bonds—Authorized.

In any instance where the district is using, selling or leasing water for beneficial purposes or furnishing other service under the provisions of this chapter and there is reasonable certainty of a permanent fixed income from this source, the district board, upon previous written approval of the county legislative authority of the county within which the major portion of the district is situated, shall have authority to pledge the revenues derived from a fixed proportion of the gross income thus obtained and to issue bonds of the district payable from the utility bond fund and to sell the same to raise money for district purposes.

[**1985 c 396 § 78; 1937 c 72 § 198;** RRS § 9663E-198. Formerly RCW **86.08.790**, part.]

86.09.595
Utility revenue bonds—Limited obligation—Payment from special fund.

Bonds payable from the utility bond fund shall not be an obligation of the district and they shall state on their face that they are payable solely from a special fund derived from a certain fixed proportion (naming

it) of the gross income derived by the district from the sale or lease of water or from other service, as the case may be, and such fixed proportion of such gross income shall be irrevocably devoted to the payment of such bonds with interest until the same are fully paid.

[**1937 c 72 § 199;** RRS § 9663E-199. Formerly RCW **86.08.790**, part, and **86.08.800**, part.]

86.09.598
Utility revenue bonds—Form, terms, interest, etc.

(1) Said utility bonds shall be numbered consecutively, shall mature in series amortized in a definite schedule during a period not to exceed twenty years from the date of their issuance, shall be in such denominations and form and shall be payable, with annual or semiannual interest at such rate or rates and at such place as the county legislative authority of the county within which the major portion of the district is situated shall provide. Such bonds may be in any form, including bearer bonds or registered bonds as provided in RCW **39.46.030**.

(2) Notwithstanding subsection (1) of this section, such bonds may be issued and sold in accordance with chapter **39.46** RCW.

[**1985 c 396 § 79; 1983 c 167 § 207; 1970 ex.s. c 56 § 94; 1969 ex.s. c 232 § 45; 1937 c 72 § 200;** RRS § 9663E-200. Formerly RCW **86.08.800**, part.]

NOTES:

Liberal construction—Severability—1983 c 167: See RCW **39.46.010** and note following.

Purpose—1970 ex.s. c 56: See note following RCW **39.52.020**.

Validation—Saving—Severability—1969 ex.s. c 232: See notes following RCW **39.52.020**.

86.09.601
Utility revenue bonds—Election to authorize.

For the purpose of authorizing such utility bonds, an election shall be called, noticed, held and canvassed by the same officers, and in the same manner, as provided herein for the calling, noticing, holding and canvassing of an election to authorize general obligation bonds.

[**1937 c 72 § 201;** RRS § 9663E-201. Formerly RCW **86.08.790**, part.]

86.09.616
Utility revenue bonds and coupons—Order of payment—When funds deficient.

Utility bonds and interest thereon shall be paid in the order of their respective due dates and the bonds and interest of a prior issue shall carry preference in payment over those of a subsequent issue: PROVIDED, That where there is not sufficient money in the utility bond fund to pay all matured demands against the same in accordance with the preference right above mentioned, the county treasurer shall pay

the interest on the bonds having the preference right of payment in their numerical order beginning with the bond having the smallest number, to the extent of the available money in the utility bond fund.

[1937 c 72 § 206; RRS § 9663E-206. Formerly RCW 86.08.800, part.]

86.09.619
District directors to make provision for payment—Procedure on failure of directors.

It shall be the duty of the board of directors of the district to make adequate provision for the payment of all district bonds in accordance with their terms by levy and collection of assessments or otherwise and upon its failure so to do said levy and collection of assessments shall be made as follows:

(1) If the annual assessment roll has not been delivered to the county treasurer on or before the fifteenth day of January, he or she shall notify the secretary by registered mail that the roll must be delivered to him or her forthwith.

(2) If the roll is not delivered within ten days from the date of mailing the notice, or if the roll has not been equalized and the levy made, the treasurer shall immediately notify the county commissioners of the county in which the office of the directors is situated, and such commissioners shall cause an assessment roll for the district to be prepared and shall equalize it if necessary, and make the levy in the same manner and with like effect as if it had been made and equalized by the directors, and all expenses incident thereto shall be borne by the district.

(3) In case of neglect or refusal of the secretary to perform his or her duties, the district treasurer shall perform them, and shall be accountable therefor, on his or her official bond, as in other cases.

[2013 c 23 § 469; 1965 c 26 § 12; 1937 c 72 § 207; RRS § 9663E-207. Formerly RCW 86.08.820, part.]

86.09.621
Special assessment bonds.

Special assessment bonds and notes shall be issued and sold in accordance with chapter 85.38 RCW.

[1986 c 278 § 28.]

NOTES:

Severability—1986 c 278: See note following RCW 36.01.010.

86.09.622
Dissolution of districts—Procedure.

Flood control districts may be dissolved upon a favorable sixty percent vote of the electors voting at an election for that purpose called, noticed, conducted and canvassed in the manner provided in this chapter for special elections and no further district obligations shall thereafter be incurred: PROVIDED, That the election shall not abridge or cancel any of the outstanding obligations of the district, and the county

legislative authority of the county within which the major portion of the district is situated shall each year at the time and in the manner provided in this chapter for the levy of district assessments, levy assessments against the lands in the district and the same shall be collected and enforced in the manner provided herein, until the outstanding obligations of the district are fully paid.

[**1985 c 396 § 83; 1937 c 72 § 208;** RRS § 9663E-208. Formerly RCW **86.08.830**, part.]

NOTES:

*Dissolution of districts: Chapter **53.48** RCW.*

86.09.625
Dissolution of districts—When complete.

When the obligations have been fully paid, all moneys in any of the funds of the district and all collections of unpaid district assessments shall be transferred to the general fund of the county within which the major portion of the district is situated as partial reimbursement for moneys expended and services rendered by the county for and in behalf of the district, and thereupon the county legislative authority of that county shall file a statement of the full payment of the district's obligations for record in the county auditor's office in each county in which any lands in the district were situated and thereafter the dissolution of the district shall be complete and its corporate existence ended.

[**1985 c 396 § 84; 1937 c 72 § 209;** RRS § 9663E-209. Formerly RCW **86.08.830**, part.]

NOTES:

*Reclamation revolving fund abolished, moneys transferred to reclamation revolving account: RCW **43.79.330** through **43.79.334**.*

86.09.700
Revision of district—Petition.

A board may amend the district comprehensive plan of flood control, alter, reduce or enlarge the district system of improvement, within or without the district, and change the district boundaries so as to include land likely to be benefited by said amendment, alteration, reduction or enlargement by filing a petition to that effect with the county legislative authority of the county within which the major portion of the district is situated.

[**1985 c 396 § 85; 1965 c 26 § 14.**]

86.09.703
Revision of district—Establishment of revised district—Review of benefits—Liability of original district—Segregation of funds.

If funds are available the county legislative authority shall, at the expense of the county, refer the petition to the county engineer for a preliminary investigation as to the feasibility of the objects sought by the petition. If the investigation discloses that the matter petitioned for is feasible, conducive to the public welfare, consistent with a comprehensive plan of development and in the best interest of the district and will promote the purposes for which the district was organized, the county legislative authority shall so find, approve the petition, enter an order in his or her records declaring the establishment of the new boundaries as petitioned for, or as modified by him or her, and file a certified copy of the order with each county auditor, without filing fee, and with the board.

The board shall forthwith cause a review of the classifications and ratio of benefits, in the same manner and with the same effect as for the determination of such matters in the first instance.

The lands in the original district shall remain bound for the whole of the original unpaid assessment thereon for the payment of any outstanding warrants or bonds to be paid by such assessments. Until the assessments are collected and all indebtedness of the original district paid, separate funds shall be maintained for the original district and the revised district.

[**2013 c 23 § 470; 1985 c 396 § 86; 1965 c 26 § 15.**]

86.09.710
Annexation of territory—Consolidation of special districts—Suspension of operations—Reactivation.

Flood control districts may annex territory, consolidate with other special districts, and have their operations suspended and be reactivated, in accordance with chapter **85.38** RCW.

[**1986 c 278 § 16.**]

NOTES:

Severability—1986 c 278: See note following RCW **36.01.010**.

86.09.720
Cooperative watershed management.

In addition to the authority provided in this chapter, flood control districts may participate in and expend revenue on cooperative watershed management arrangements and actions, including without limitation those under chapter **39.34** RCW, under chapter **39.106** RCW, and under other intergovernmental agreements authorized by law, for purposes of water supply, water quality, and water resource and habitat protection and management.

[**2011 c 258 § 15; 2003 c 327 § 18.**]

NOTES:

Short title—Purpose—Intent—2011 c 258: See RCW **39.106.010**.

Finding—Intent—2003 c 327: See note following RCW **39.34.190**.

86.09.900
Other statutes preserved.

Nothing in this chapter contained shall be construed as affecting or in any wise limiting the powers of counties, cities, towns, diking districts, drainage districts, or other municipal or public agencies in the manner authorized by law to construct and maintain dikes, levees, embankments or other structures and works, or to open, deepen, straighten and otherwise enlarge natural water courses, waterways and other channels, for the purpose of protecting such organizations from overflow.

[**1937 c 72 § 210;** RRS § 9663E-210.]

86.09.910
Chapter supplemental to other acts.

Nothing in this chapter contained shall be held or construed as in any manner abridging, enlarging or modifying any statute now or hereafter existing relating to the organization, operation and dissolution of flood control districts. This chapter is intended as an independent chapter providing for a separate and an additional authority from and to any other authority now existing for the organization, operation and dissolution of flood control districts, as provided in this chapter.

[**1937 c 72 § 211;** RRS § 9663E-211.]

86.09.920
Chapter liberally construed.

The provisions of this chapter and all proceedings thereunder shall be liberally construed with a view to effect their objects.

[**1937 c 72 § 212;** RRS § 9663E-212.]

APPENDIX D: ADMINISTRATIVE AND REAL ESTATE INFORMATION

D-1: SAMPLE BUDGET SPREADSHEETS

D-2: EXPLANATION OF ASSESSMENT CALCULATIONS

D-3: SAMPLE SEGREGATION CALCULATIONS

D-4: DISTRICT OWNED PARCEL LISTING

D-5: LIST OF OUTLET CHANNEL WATER RIGHTS

D-6: "NEWMAN DITCH" HISTORIC PROPERTY RECORD FORM

D-7: JOB DESCRIPTIONS

D-8: ADVISORY BOARD POSITION APPLICATION FORM

D-1: SAMPLE BUDGET SPREADSHEETS

NEWMAN LAKE FLOOD CONTROL ZONE DISTRICT 2001 PROPOSED BUDGET

INCOME SUMMARY	2000 Budget	2001 Budget	%Change
NLFCZD Assessments	**$167,520**	**$188,010**	12.2%
Investment Interest	**$3,000**	**$3,000**	0.0%
From Reserves	**$11,054**	**$0**	-100.0%
TOTAL INCOME	**$181,574**	**$191,010**	**5.2%**
EXPENDITURES			
Salaries/OH/Benefits:			
Johns	$750	$750	0.0%
Williams	$3,000	$2,500	-16.7%
Barrentine	$47,200	$47,200	0.0%
Feldhahn	$2,500	$2,500	0.0%
Franklin	$4,000	$4,000	0.0%
Other (incl. Diver) Assistance	$5,800	$5,800	0.0%
Subtotal-	**$63,250**	**$62,750**	**-0.8%**
Support Agreements and Assistance:			
WSU for WQ Monitoring	$25,000	$25,000	0.0%
Watershed Activities/Watershed Commi	$5,000	$5,000	0.0%
NPDES Permit for Alum System	$2,500	$2,500	0.0%
NRCS for Snow Gage Site	$2,500	$2,500	0.0%
Programming Assist.	$200	$200	0.0%
Legal Assistance	$500	$500	0.0%
Subtotal-	**$35,700**	**$35,700**	**0.0%**
Equip. & Facility Operation/Repair/Maint.:			
Minor FC Maintenance/Repairs	$12,000	$2,000	-83.3%
Sump Cleaning	$10,000	$13,000	30.0%
Noxious Weed Spraying	$2,000	$3,000	50.0%
Electricity	$20,000	$18,000	-10.0%
Alum Purchases	$27,100	$27,100	0.0%
Equipment Maint.	$3,000	$4,500	50.0%
Road "Oiling"	$60	$60	0.0%
Materials and Supplies	$1,100	$3,100	181.8%
Subtotal-	**$75,260**	**$70,760**	**-6.0%**
Overhead:			
Property Taxes	$60	$75	25.0%
Insurance	$1,100	$1,000	-9.1%
Motorpool/Mileage	$1,550	$3,000	93.5%
Adver., Printing, Post., Publ., Hall rental	$600	$625	4.2%
Watershed Newsletter	$1,400	$1,900	35.7%
Training/Travel	$200	$200	0.0%
Subtotal-	**$4,910**	**$6,800**	**38.5%**
Capital:	**$2,454**	**$0**	**-100.0%**
Added to Reserves:	**0**	**$15,000**	
TOTAL EXPENDITURES	**$181,574**	**$191,010**	5.2%

RESERVES SUMMARY

	FC	WQ	Total
Estimated Fund Balance (Reserves) as of Jan 1, 2001	$14,307	$50,854	$65,161
Added to Dike Repair/Aerator Repair Reserves	$10,000	$5,000	$15,000
Estimated Fund Balance (Reserves) as of Jan 1, 2002	$24,307	$55,854	$80,161

Note: Goal Reserve Balances are $40,000 for Flood Control and $70,000 for Water Quality

2000 BUDGET VS. CURRENT AND ESTIMATED EXPENSES WORKSHEET (9/28/00)

INCOME SUMMARY

	Flood Control		Water Quality		Total	
	2000 Budget	2000 Current Est.	2000 Budget	2000 Current Est.	2000 Budget	2000 Est. Total
2000 NLFCZD Assessments	$43,160	$43,160	$124,360	$124,360	$167,520	$167,520
Investment Interest (estimated)	$1,000	$781	$2,000	$1,561	$3,000	$2,342
From Reserves	$10,600	$19,231	$454	$21,013	$11,054	$40,244
TOTAL INCOME	$54,760	$63,172	$126,814	$146,934	$181,574	$210,106

EXPENSE SUMMARY

	Flood Control				Water Quality				Total			
	2000 Budget	2000 Exp. To Date	2000 Est. Total	Amt. Under(-) Over(+)	2000 Budget	2000 Exp. To Date	2000 Est. Total	Amt. Under(-) Over(+)	2000 Budget	2000 Exp. To Date	2000 Est. Total	Amt. Under(-) Over(+)
Salaries/OH/Benefits												
Johns	$500	$0	$500	$0	$250	$0	$250	$0	$750	$0	$750	$0
Williams	$1,500	$272	$1,500	$0	$1,500	$476	$1,500	$0	$3,000	$747	$3,000	$0
Barrentine	$17,800	$5,829	$17,800	$0	$29,400	$10,445	$29,400	$0	$47,200	$16,274	$47,200	$0
Feldhahn	$2,500	$1,087	$2,500	$0	0	0	0		$2,500	$1,087	$2,500	$0
Franklin	$1,000	$540	$1,000	$0	$3,000	$828	$3,000	$0	$4,000	$1,368	$4,000	$0
Other: Clary		$478	$0			$192						
Repp		$65	$65									
subtotal(other)	$2,000	$543	$2,000	$0	$3,000	$192	$3,000	$0	$5,000	$736	$5,000	$0
Subtotal	**$25,300**	**$8,272**	**$25,300**	**$0**	**$37,150**	**$11,940**	**$37,150**	**$0**	**$62,450**	**$20,212**	**$62,450**	**$0**
Support Costs:												
WSU for WQ Monitoring	-	-	-		$25,000	$0	$25,000	$0	$25,000	$0	$25,000	$0
Watershed Activities/Committee					$5,000	$0	$5,000		$5,000	$0	$5,000	
NPDES Permit for Alum System					$2,500	$1,262	$2,500	$0	$2,500	$1,262	$2,500	$0
NRCS for Snow Gage Site	$2,500	$2,500	$2,500	$0					$2,500	$2,500	$2,500	$0
Programming Assist.	$100	$0	$100	$0	$100		$100	$0	$200	$0	$200	$0
Legal Assistance	$250	$1	$250	$0	$250	$11	$250	$0	$500	$13	$500	$0
Subtotal	**$2,850**	**$2,501**	**$2,850**	**$0**	**$32,850**	**$1,273**	**$32,850**	**$0**	**$35,700**	**$3,775**	**$35,700**	**$0**
Facility Operation/Repair/Maint.:												
Dike Repairs, Channel Stabilization	$12,000		$2,000	-$10,000					$12,000	$0	$2,000	-$10,000
Debris Removal, Seeding,etc.				$0					$0	$0	$0	$0
Sump Cleaning	$10,000	$0	$26,000	$16,000					$10,000	$0	$26,000	$16,000
Noxious Weed Spraying	$2,000	$0	$2,600	$600					$2,000	$0	$2,600	$600
Sump Easement	$0	$700	$700	$700					$0	$700	$700	$700
Electricity				$0	$20,000	1,665.06	$18,000	-$2,000	$20,000	$1,665	$18,000	-$2,000
Alum Purchases				$0	$27,100	$11,801	$27,100	$0	$27,100	$11,801	$27,100	$0
Equipment Maint.				$0	$3,000	$2,326	$19,550	$16,550	$3,000	$2,326	$19,550	$16,550
Oxygen Line repairs (1999)					$800	$1,750	$1,750	$950	$800	$1,750	$1,750	$950
Water Service					$0	$0	$400	$400	$0	$0	$400	$400
Alum Line Easement					$0	$0	$1,000	$1,000	$0	$0	$1,000	$1,000
Road "Oiling"				$0	$60	$0	$50	-$10	$60	$0	$50	-$10
Materials and Supplies	$600	$68	$762	$162	$500	$1,131	$2,000	$1,500	$1,100	$1,199	$2,762	$1,662
SubTotal	$24,600	$768	$32,062	$7,462	$51,460	$18,673	$69,850	$18,390	$76,060	$19,441	$101,912	$25,852

2000 BUDGET VS. CURRENT AND ESTIMATED EXPENSES WORKSHEET (9/28/00)

EXPENSE SUMMARY (cont't)

	Flood Control				Water Quality				Total			
	2000 Budget	2000 Exp. To Date	2000 Est. Total	Amt. Under(-) Over(+)	2000 Budget	2000 Exp. To Date	2000 Est. Total	Amt. Under(-) Over(+)	2000 Budget	2000 Exp. To Date	2000 Est. Total	Amt. Under(-) Over(+)
Overhead Costs:												
Property Taxes	$60	$225	$225	$165					$60	$225	$225	$165
Insurance	$550	$460	$460	-$90	$550	$460	$460	-$90	$1,100	$920	$920	-$180
Motorpool	$700	$554	$1,500	$800	$850	$377	$1,500	$650	$1,550	$931	$3,000	$1,450
Adv, Printing, Post., Publ.	$300	$9	$300	$0	$300	$8	$325	$25	$600	$17	$625	$25
Watershed Newsletter	$300	$128	$475	$175	$1,100	$490	$1,425	$325	$1,400		$1,900	$500
Travel/Training	$100	$0	$0	-$100	$100	$0	$0	-$100	$200	$0	$0	-$200
Subtotal	$2,010	$1,376	$2,960	$950	$2,900	$1,335	$3,710	$810	$4,910	$2,711	$6,670	$1,760
Capital Exp.:												
Oil/Water Separator	$0	$0	$0	$0	$2,454	$892	$920	-$1,534	$2,454	$892	$920	-$1,534
Alum Pump					$0	$0	$2,454	$2,454	$0	$0	$2,454	$2,454
Subtotal	$0	$0	$0	$0	$2,454	$892	$3,374	$920	$2,454	$892	$3,374	$920
Added to Reserves:	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL EXPENSES	$54,760	$12,917	$63,172	$8,412	$126,814	$34,113	$146,934	$20,120	$181,574	$47,030	$210,106	$28,532

RESERVE SUMMARY

Fund Balance (Reserves) as of Jan. 1, 2000	$46,371		$33,538		$71,861		$71,867		$118,232		$105,405	
1998/1999 Assessment Refunds	$0		-$802		$0		-$566		$0		-$1,367	
From Reserves	-$10,600		-$19,231		-$454		-$21,013		-$11,054		-$40,244	
Est. Reserves as of Jan. 1, 2001	$35,771		$13,505		$71,407		$50,288		$107,178		$63,794	

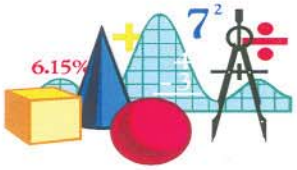
Notes: Flood control maint. for 2000 will include debris removal from channel and outlet gates by work crews. Dike repairs were planned for this year, but insufficent funds are budgeted and extra funds are needed to scrape sump

Sump Cleaning: Need to remove silts from sump as heavy runoff this year has plugged the entire sump.

Alum pumps: Still investigating options, so far $2,500/pump min. Other Options are to purchase one new pump this year and 2nd back up next year or use current pumps as back up.

D-2: EXPLANATION OF ASSESSMENT CALCULATIONS

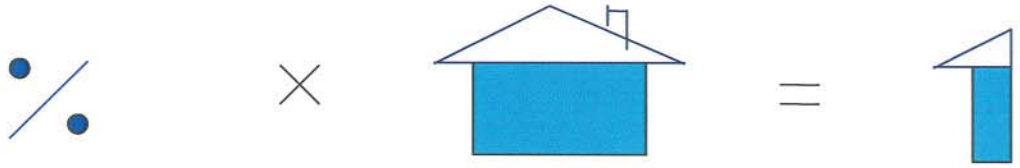
How your Newman Lake Flood Control Zone District Assessments are Calculated!!!



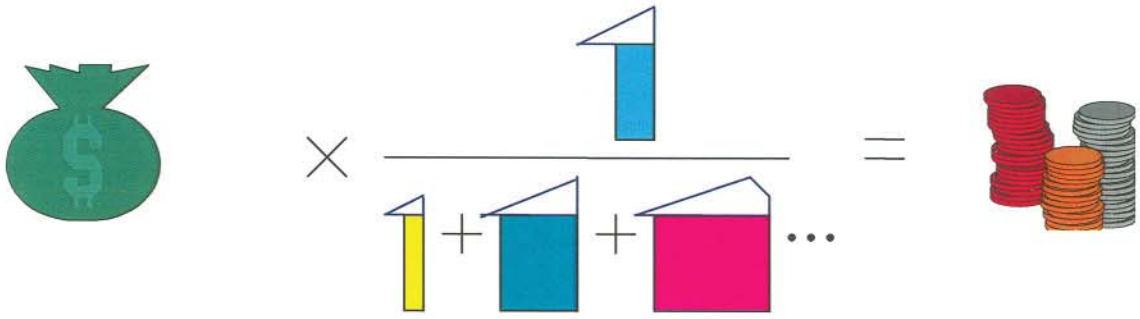
- **Why did my District assessment change this year???** Your location with in the District is the main factor in how much you pay. But, assessment changes are not only affected by changes in the District budget, but also by relative changes in assessed property values within the District. To understand this better I'll explain how the District assessments are calculated.

- **Benefit Assessments**: At the time of the formation of the district it was decided that of the funding options for flood control zone districts, benefit assessments would be the most equitable. Every parcel within the district is classified by benefit areas for both flood/lake level control facility benefits and water quality improvement facility benefits. This classification, and its associated benefit classification percentage, is based on the estimated amount that a parcel benefits from the implemented improvements by the district. For example, a primary lake front lot will be in higher rate classes (50-100%) than a lot without frontage. Agricultural properties below the lake benefiting from lake level controls are in a high flood control classification (100%), but are in a low (0-10%) classification for water quality improvements. Parcels in the upper watershed, receiving no benefit from any of the districts lake improvements, are classed at 0% for both. Your assessment is therefore based on your adjusted property value, a product of your benefit classification percentage and your assessed property value.

- **How is my Assessment Calculated???**



Your Benefit Classification Percentage x Your Assessed Property Value = Your Adjusted Assessed Value



Total District Funding Requirement x Your Adjusted Assessed Value / Total of all District Adjusted Assessed Values = Your District Assessment

- **Effect???** As you can see, the amount of your assessment each year is affected not only by any changes in district budget requirements, but also by relative changes in assessed values. If your parcel's assessed value goes up relative to others in

the district, e.g. due to improvements you've made in your property, increases in waterfront vs. secondary lot valuation, timing of County assessor's valuation updates, etc., then your assessment will increase accordingly.

- **Example:**

  For a Lake front lot with a **$67,200** assessed valuation, benefit classification percentage of **50%** for Flood Control **(FC)** and **100 %** for Water Quality **(WQ)** improvements, the **1998 District Assessment** was calculated as follows:

  $67,200 x 50% = $33,600, FC Adjusted Property Value

  $67,200 x 100%= $67,200, WQ Adjusted Property Value

  1998 District **FC** Funding Requirement = **$73,000** 1998 District **WQ** Funding Requirement = **$135,000**

  1998 District **FC** Adjusted Property Values = **$15,290,568** 1998 District **WQ** Adjusted Property Values = **$31,054,572**

  Therefore:

  FC Assessment: **$73,000** **x** $\frac{\$33,600}{\$15,290,568}$ = **$160.41**

  WQ Assessment: **$135,000** **x** $\frac{\$67,200}{\$31,054,572}$ = **$292.13**

  1998 District Assessment: **$452.54**

- **Assessed Value Changes:** The Assessor's Office is required by law to appraise real property at 100% of market value (RCW 84.40.030). Spokane County is on an annual revaluation and a six-year inspection cycle. The Assessor office staff has recently inspected the Newman Lake area. Sales comparison is the primary basis for valuation of property. This has resulted in and may result in further significant increases in assessed valuation of some properties in the area. Newman Lake area residences should expect to receive a revaluation statement for tax year 1999 from the Assessor's office sometime in late July or early August. Property owners who have questions regarding their new valuation should contact the Assessor's Office after they receive their notices.

- **Interesting Facts:** There are approximately 1730 parcels within the boundaries of the District, of these 785 pay District assessments. The average parcel assessment in 2000 was $213. The largest 2000 District assessment on a parcel was $1,227.

- **Questions???** If you have any questions about your District assessment, benefit classification, etc., please call Marianne Barrentine at (509) 477-7443. Questions on your assessed property valuation should be directed to the Spokane County Assessors Office at (509) 477-5793.

D-3: SAMPLE SEGREGATION CALCULATIONS

D-3: SAMPLE SEGREGATION CALCULATIONS

Mid-year Assessment adjustments:

	Parcel #	Valuation	Assessment
Parent:	56555.0010	$100,000	$500.00
Child #1:	56555.0011	$55,000 /100,000 x 500 =	$275.00
Child #2:	56555.0012	$25,000 /100,000 x 500 =	$125.00
Child #3:	56555.0011	$20,000 /100,000 x 500 =	$100.00

If parent is has different benefit areas and children are not split in the same proportion then adjustments will need to be made to this calculation. For example a child that is wholly on a class #5 benefit area will not have any charge and the other children will split current charge. In cases were the children have different benefit areas the adjustments shall be made by using the adjusted valuation [see II.B.3.a].

End-of year Roll Update Calculations:

If a parcel has been segregated during the year, the parent(s) will show up as inactive and not be included on the new roll. The children will now show up as active parcels and will need to have benefit area information added so they can have charges applied as part of the new roll assessments calculations. These benefit areas need to be determined based on the percent of area in each benefit area. Benefit area boundary lines need to be determined from the Base Assessment maps for Flood Control and Lake restoration.

For example in the parcels shown in the attached sketch, both children are split between class 1 and class 2 for Lake restoration and similarly between class 3 and class 4 for Flood Control as they have the same boundary at this location.

56031.0517

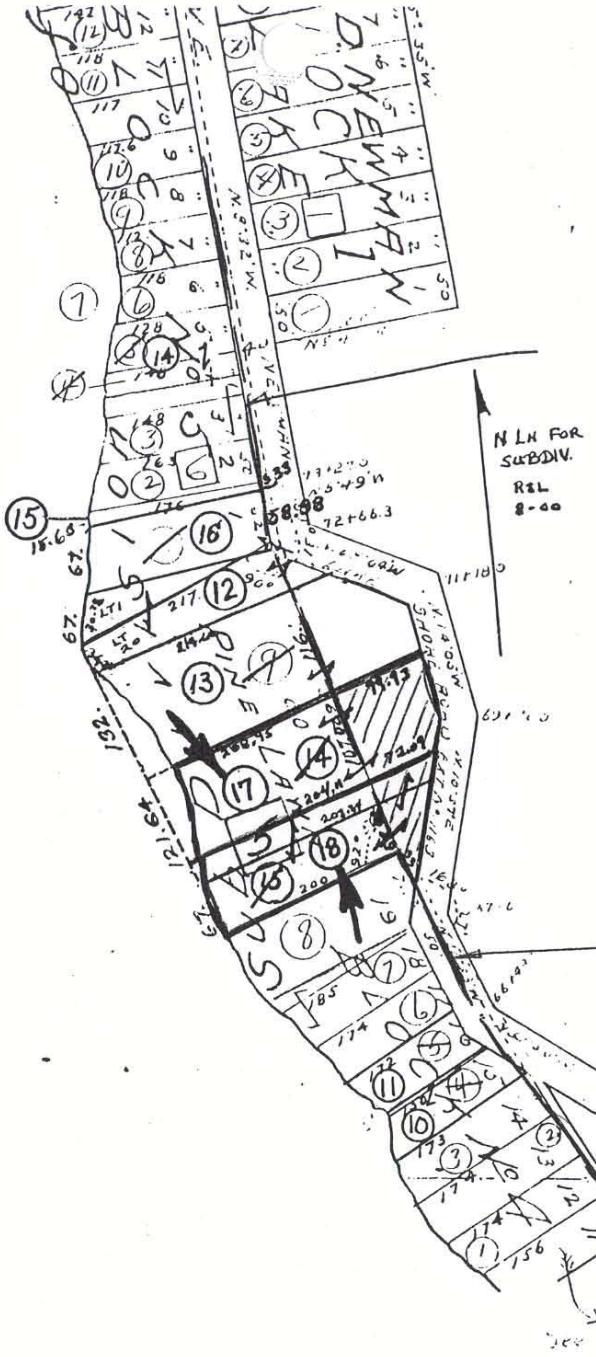
Area 1: ½(190' +205') x 107' = 21,133 sf
Area 2: ½(100' + 72') x 107' = 9,202 sf
Total 30,335 sf

Lake Restoration: 21,133/30,335 = 70% Class 1 9,202/30,335 = 30% Class 2
Flood Control: similarly, 70% Class 3 and 30% Class 4

56031.0518

Area 1: ½(204'+200') x 80' = 16,160 sf
Area 2: ½(113' x 72') = 4,012 sf
Total 20,172 sf

Lake Restoration: 16,160/20,172 = 80% Class 1 4,012/20,172 = 20% Class 2
Flood Control: Similarly, 80% Class 3 and 20% Class 4



AFTER 99-0563

56031.0517
.0518

D-4: DISTRICT OWNED PARCEL LISTING

NEWMAN LAKE FLOOD CONTROL ZONE DISTRICT

LIST OF REAL ESTATE PARCELS OWNED

Parcel #	Date Received	Grantor	Description
56115.9011	?	?	Outlet gate parcel
56111.9014	June 1, 1981	Otis Orchards Irr. Dist.	Parcel just south of new outlet gate
56111.9021	June 1, 1981?	Otis Orchards Irr. Dist.?	Parcel east of new outlet gate
56231.9063	June 1, 1981	Otis Orchards Irr. Dist	Strip of land between channel and Starr Rd.
56234.9015	June 1, 1981	Otis Orchards Irr. Dist	Strip of land between channel and Starr Rd.
56245.9056	November 11,1984	Beck	30 ac. including main part of sump

D-5: LIST OF OUTLET CHANNEL WATER RIGHTS

NEWMAN LAKE OUTLET CHANNEL

LIST OF WATER RIGHTS (either Permitted or Claimed)

Date	Applicant	Parcel No./Legal Description	Location of Diversion/Withdrawal	Quantity/Use
3/1/68	Helen Eller	56234.0201, SW1/4 SE1/4 SE1/4 of Sec. 23 T26N R 45E less rights of way	400 feet north and 900 feet west from the SE corner of Sec. 23	0.1 cfs, 2 acre-feet per year, continuously, for domestic supply and for non-consumptive wildlife refuge supply (pond circulation) and fire protection.
11/27/73	Larry F. Connel	That part of the north 1190 feet of the south 1616 feet of the SW1/4 of Sec. 13 T 26N R45E lying westerly of the Newman Lake Drainage Ditch	900 feet north and 800 feet east from the Southwest corner of Sec. 13 T26N R45E	0.4 cubic feet per sec, 69 acre-feet per year, from April 15 to October 15, each year, for the irrigation of 20 acres.
4/4/66	Albin E. Ost	The north 70 acres of that part of the W1/2 W1/2 of Sec. 13 T26N R 45E lying and being west of the centerline of the Newman Lake Drainage Ditch	300 feet north and 1000 feet east of the W1/4 corner of Sec. 13 T26N R 45E	0.67 cfs, 170 acre-feet per year, from April 1 to September 30, each year, for the irrigation of 55 acres.
4/18/74	Charles M. Davidson	South 426 feet of the SW ¼, of Sec. 13 T26N R45E, lying west of the Newman Lake Drainage Ditch	624 feet east and 426 feet north from the SW corner of Sec. 13 T26N R45E	25 gpm, 16 acre-feet per year, for July, August, and September for the irrigation and stock water for 4 acres
11/30/73	Edward Marisch	That part of the south 480 feet of the north 585 feet of the NE1/4 of the NE1/4 of Sec 26 T26N R45E, lying easterly of the Newman Lake Road (Starr Rd.), less raods	Within the NE1/4 NE1/4 NE1/4 of Sec 26 and SE1/4 SE1/4 SE ¼ of Sec 23 T26N R45E	.02 CFS, 1 acre-foot per year for domestic supply and pond circulation, fish propagation and recreation, continuously each year

As described in documents provided by the Eastern Regional Office of the Department of Ecology 11/98

D-6: "NEWMAN DITCH" HISTORIC PROPERTY RECORD FORM

HISTORIC PROPERTY INVENTORY FORM

IDENTIFICATION SECTION
Field Site No.: OAHP No.: Date Recorded: March 1998
Site Name Historic: Newman Ditch
Common: Newman Ditch
Field Recorder: Stephen Emerson
Owner's Name:
Address:
City/State/Zip Code:

Status:
- ☒ Survey/Inventory
- ☐ National Register
- ☐ State Register
- ☐ Determined Eligible
- ☐ Determined Not Eligible
- ☐ Other (HABS, HAER, NHL)
- ☐ Local Designation

PHOTOGRAPHY
Photography Neg. No.:
(Roll No. & Frame No.): 1: 1,2,5,11,16,17
View of: Newman Ditch
Date: March 1998

Classification: ☐ District ☐ Site ☐ Building ☒ Structure ☐ Object
District Status: ☐ NR ☐ SR ☐ LR ☐ INV
Contributing: ☐ Non-Contributing: ☐
District/Thematic Nomination Name:

DESCRIPTION SECTION
Materials & Features/Structural Types
Building Type:
Plan:
Structural System:
No. of Stories:

Cladding (Exterior Wall Surfaces):
- ☐ Log
- ☐ Horizonal Wood Siding
  - ☐ Rustic/Drop
  - ☐ Clapboard
- ☐ Wood Shingle
- ☐ Board and Batten
- ☐ Vertical Board
- ☐ Asbestos/Asphalt
- ☐ Brick
- ☐ Stone
- ☐ Stucco
- ☐ Terra Cotta
- ☐ Concrete/Concrete Block
- ☐ Vinyl/Aluminum Siding
- ☐ Metal (specify):
- ☐ Other (specify):

Roof Type:
- ☐ Gable
- ☐ Hip
- ☐ Flat
- ☐ Pyramidal
- ☐ Monitor
- ☐ Shed
- ☐ Gambrel
- ☐ Other (specify):

Roof Material:
- ☐ Wood Shingle
- ☐ Wood Shake
- ☐ Composition
- ☐ Slate
- ☐ Tar/Built-up
- ☐ Tile
- ☐ Metal (specify):
- ☐ Other (specify):
- ☐ Not visible

Foundation:
- ☐ Log
- ☐ Post/Pier
- ☐ Stone
- ☐ Brick
- ☐ Other (specify):
- Concrete
  - ☐ Block
  - ☐ Poured
- ☐ Not visible

Integrity (See Detailed Description of Physical Appearance):

	Intact	Slight	Moderate	Extensive
Changes to plan.	☐	☐	☐	☐
Changes to windows	☐	☐	☐	☐
Changes to original cladding	☐	☐	☐	☐
Changes to interior.	☐	☐	☐	☐
Other (specify):	☐	☐	☐	☐

State of Washington, Department of Community, Trade and Economic Development
Office of Archaeology and Historic Preservation
420 Golf Club Road SE, Suite 201
Olympia, Washington 98504-8343

LOCATION SECTION
Address: Newman Lake
City/Town/County/Zip Code: Spokane, Spokane County, 99025
Township: T26N Range: R45E Section: 11,13,23,24
1/4 Section: 1/4 1/4 Section:
Tax No./Parcel No.: Acreage:
Quadrangle or map name: Newman Lake 7.5 (1973, PR 1986); Liberty Lake 7.5 (1973)
UTM References Zone: 11 Easting: 465020 Northing: 5290590
11 495190 5288120
11 495550 5286220
Plat/Block/Lot:
Supplemental Map(s):

High Styles/Forms (check one or more of the following):
- ☐ Greek Revival
- ☐ Gothic Revival
- ☐ Italianate
- ☐ Second Empire
- ☐ Romanesque Revival
- ☐ Stick Style
- ☐ Queen Anne
- ☐ Shingle Style
- ☐ Colonial Revival
- ☐ Beaux Arts/Neoclassical
- ☐ Chicago/Commercial Style
- ☐ American Foursquare
- ☐ Mission Revival
- ☐ Spanish Colonial Revival/Mediterranean
- ☐ Tudor Revival
- ☐ Craftsman/Arts & Crafts
- ☐ Bungalow
- ☐ Prairie Style
- ☐ Art Deco/Art Moderne
- ☐ Rustic Style
- ☐ International Style
- ☐ Northwest Style
- ☐ Commercial Vernacular
- ☐ Residential Vernacular (see below)
- ☐ Other (specify):

Vernacular House Types
- ☐ Gable front
- ☐ Gable front and wing
- ☐ Side gable
- ☐ Cross gable
- ☐ Pyramidal/Hipped
- ☐ Other (specify):

NARRATIVE SECTION

Study Unit Themes (check one or more of the following):

- ☒ Agriculture
- ☐ Architecture/Landscape Architecture
- ☐ Arts
- ☒ Commerce
- ☐ Communications
- ☐ Community Planning/Development
- ☐ Conservation
- ☐ Education
- ☐ Entertainment/Recreation
- ☐ Ethnic Heritage (specify):
- ☐ Health/Medicine
- ☐ Manufacturing/Industry
- ☐ Politics/Government/Law
- ☐ Religion
- ☐ Science & Engineering
- ☐ Social Movements/Organization
- ☐ Transportation
- ☐ Other (specify):

Statement of Significance

Date of Construction: 1895-1930 Architect/Engineer/Builder:

☒ In the opinion of the surveyor, this property appears to meet the criteria of the National Register of Historic Places.

☐ In the opinion of the surveyor, this property is located in a potential historic district (National and/or local).

The Newman Ditch, in most of its present configuration, has been in use at least since 1920 (Tiffany 1920:16). Prior to 1920, it followed a somewhat different route for part of its course (Ogle 1912). The origin of the ditch dates to 1880 (GLO 1880). Although the current function of the ditch is flood control and drainage instead of irrigation, it appears much as it did during it days of extensive irrigation use. Of all of the miles of Spokane Valley canals and ditches built during and after the fruit growing years, the Newman Ditch is one of only a few to retain the integrity of much of its historic route and still act as a channel for flowing water. For these reasons, the Newman Ditch is eligible for inclusion on the National Register of Historic Places (NRHP) under Criterion A.

Description of Physical Appearance

The Newman ditch is an unlined flood control and drainage canal, 20-25 ft wide and about three miles long, which passes beneath Starr Road Bridge No. 5605. The ditch used to be longer when it served as a major source of water for irrigation systems in the Spokane Valley. It presently drains into a marshy area just northeast of Moab. Remnants of an old headgate facility, which was bypassed when the ditch was reconfigured in the 1970s, are visible at a location about 3,500 ft northeast of the project area. The headgate remains consist of a poured concrete housing and channel structure (25 ft x 12 ft), now largely broken due to settling of the soil, and some metal gate valve components. Directly to the north of this structure are two berms indicating a former channel. This passage leads to an area that appears to have once been a pond. Structural remnants are clustered here, including old log pilings still in the ground and several poured-in-place concrete pads, one of which holds metal bolt studs indicating that it was used as a machinery mount. These structures may have been associated with the necessary task of moving logs around the canal headgate, which were then rafted down to the mill that once operated near Moab. An earlier inventory (Massengale 1980) of the Newman Ditch notes the existence of wood gates in concrete forms near a former mill pond about a quarter mile north of Moab.

Major Bibliographic References

General Land Office (GLO). Cadastral Survey Plat T26N R45E. Microfiche on file, Bureau of Land Management, Spokane, 1880.

Ogle, George A. *Standard Atlas of Spokane County, Washington*. George Ogle and Company, 1912.

Massengale, Dixie. Newman Ditch, Community Cultural Resources Survey Inventory Form (32-153). On file, Office of Archaeology and Historic Preservation, Olympia, 1980.

Tiffany, R.K. *Spokane Valley Irrigation Project: A Plan for Full Development of the Lands and Water Rights of the Spokane Valley Land and Water Company*. Spokane Valley Land and Water Company, Spokane, Washington, 1920.

HISTORIC PROPERTY INVENTORY FORM
(Continuation Sheet)

State of Washington, Department of Community, Trade and Economic Development
Office of Archaeology and Historic Preservation
420 Golf Club Road SE, Suite 201
Olympia, Washington 98504-8343

Field Site No. _____ OAHP No. _____ Date Recorded March 1998

Site Name Historic Newman Ditch

Common Newman Ditch

Photo index

1:1 Newman Ditch near north end. To northwest.

1:2 Old headgate near north end of Newman Ditch. To north.

1:5 Old headgate openings, detail. To northwest.

1:11 New headgate at north end of Newman Ditch. To northwest.

1:16 Starr Road Bridge No. 5605, across the Newman Ditch. To east.

1:17 Newman Ditch near south end. To north.

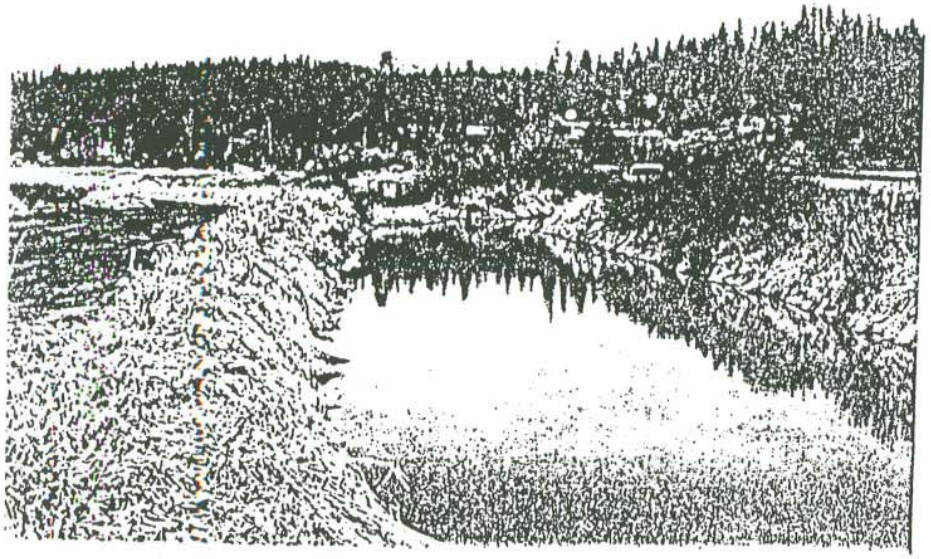
HISTORIC P. ,PERTY INVENTORY FORM
(Continuation Sheet)

State of Washington, Department of Community, Trade and Econom velopment
Office of Archaeology and Historic Preservation
420 Golf Club Road SE, Suite 201
Olympia, Washington 98504-8343

Field Site No. _____ OAHP No. _____ Date Recorded March 1998

Site Name Historic Newman Ditch

Common Newman Ditch



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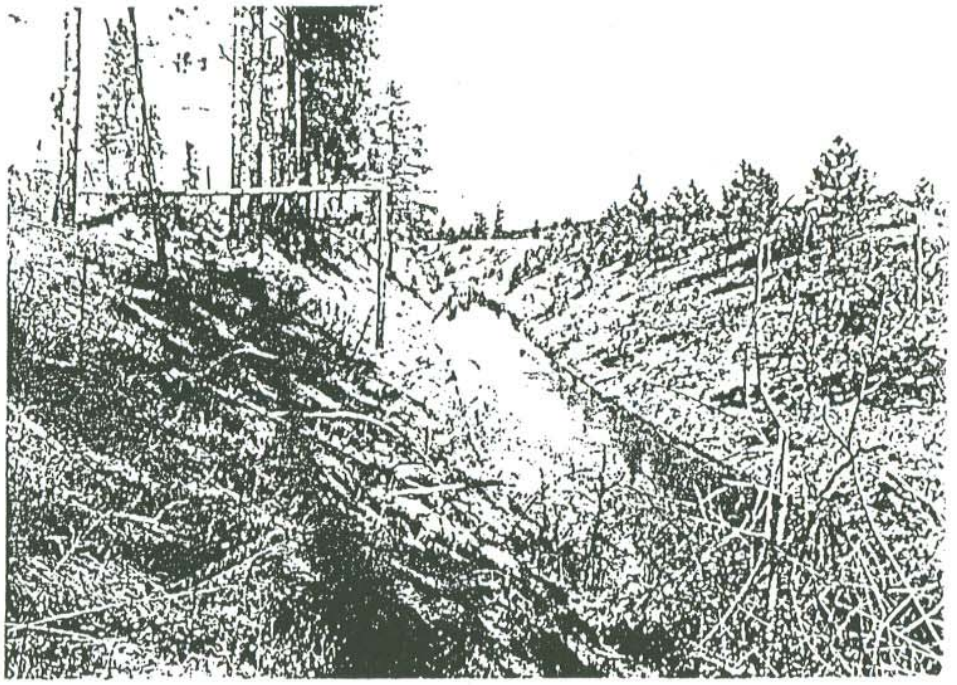

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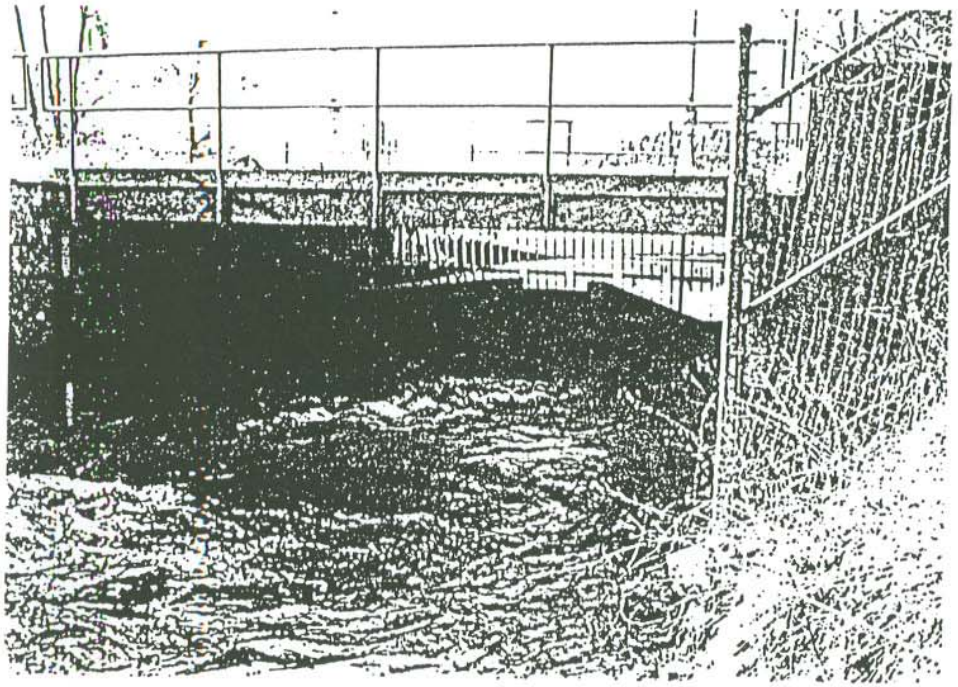
HISTORIC PROPERTY INVENTORY FORM
(Continuation Sheet)

State of Washington, Department of Community, Trade and Econon velopment
Office of Archaeology and Historic Preservation
420 Golf Club Road SE, Suite 201
Olympia, Washington 98504-8343

Field Site No. _____ OAHP No. _____ Date Recorded March 1998

Site Name Historic Newman Ditch

Common Newman Ditch



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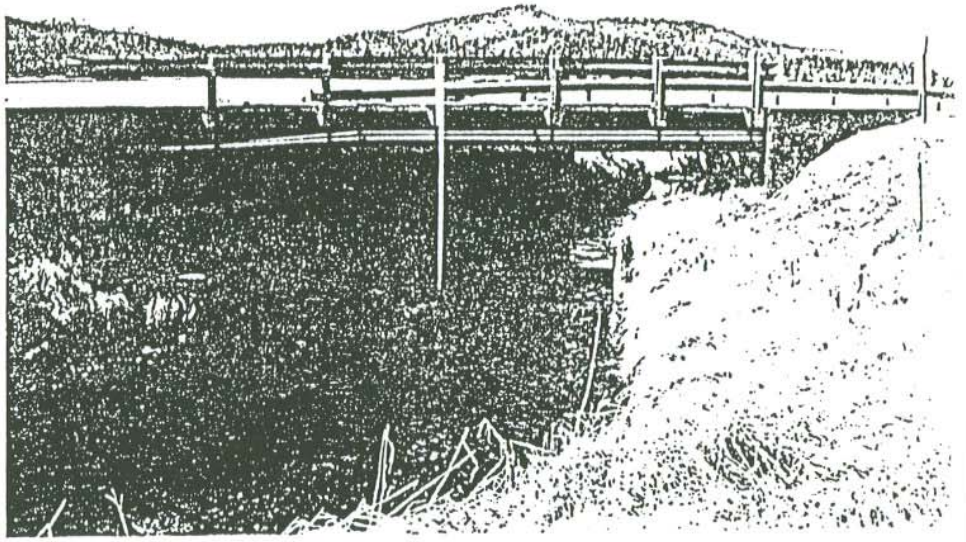

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HISTORIC PROPERTY INVENTORY FORM
(Continuation Sheet)

State of Washington, Department of Community, Trade and Econom velopment
Office of Archaeology and Historic Preservation
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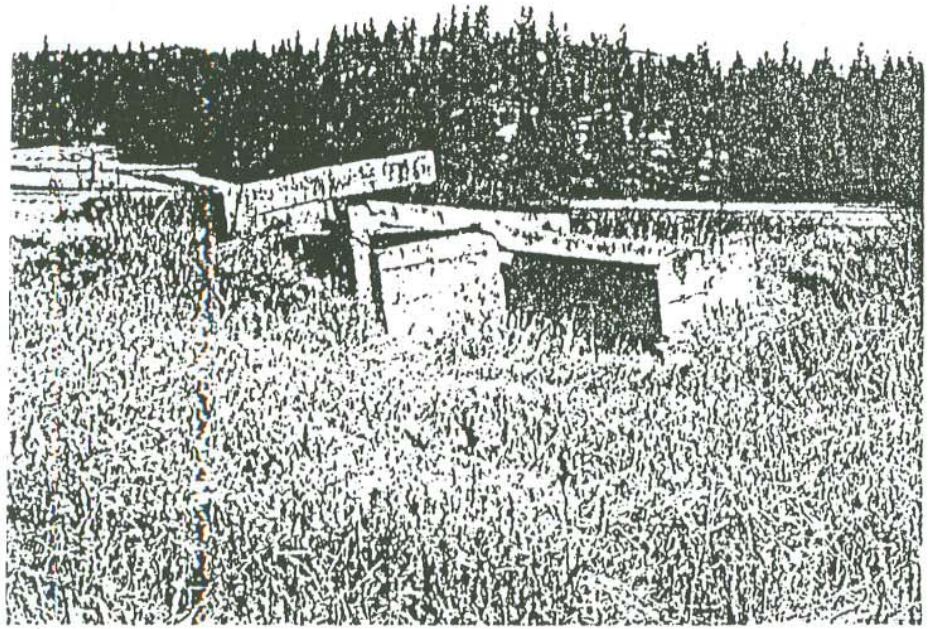
Field Site No. _____ OAHP No. _____ Date Recorded March 1998

Site Name Historic Newman Ditch

Common Newman Ditch



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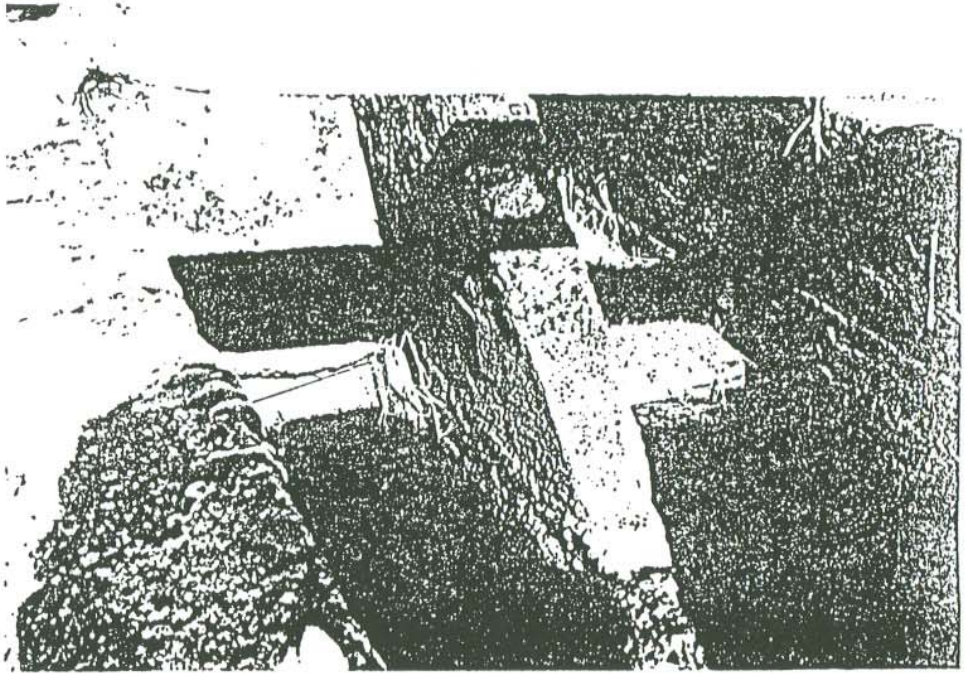

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D-7: JOB DESCRIPTIONS

NEWMAN LAKE FLOOD CONTROL ZONE DISTRICT

Job Description – Newman Lake Engineer (Engineer 2)

Tasks and Duties:

1. Overall District Operation: Prepare and Maintain the District Policy and Procedures Manual. Maintain files and documentation on the District, District responsibilities, liabilities, property ownership, etc.

2. Hypolimnetic Aerator System: Operate according to agreed upon policy and procedures and coordinate with water quality monitoring. Oversee daily monitoring to insure equipment is operated and maintained properly.

3. Alum Injection System: Review operating and permitting requirements for alum injection system, prepare reports for permits, resolve problems, operate according to agreed upon procedures and coordinate with water quality monitoring. Oversee daily monitoring to insure equipment is operated and maintained properly. Perform troubleshooting and maintenance procedures as required.

4. Lake Level Control: Review lake level and canal operating and maintenance procedures, prepare modeling, resolve problems, work with Flood Control Technician on lake levels, prepare dam safety procedures. Inspect flood control facilities annually.

5. District Real Estate: Maintain up to date records of District property ownerships, right-of-ways and easements. Recommend procedures for handling encroachments onto District property, enforce agreed upon procedures, resolve issues related to easements across district property. Obtain necessary access easements.

6. Watershed Management: Direct implementation of the Comprehensive Plan for Stormwater Control in the Newman Lake Watershed. Recommend procedures for handling watershed water quality impacts to lake (lack of culverts etc.). Work with Watershed Plan Committee and NLPOA to improve watershed management. Review development proposals for potential watershed impacts, commenting and monitoring as necessary.

7. Budget: Set up and maintain budget data base to for expense and time tracking. Prepare future/long range budgets so that future fund requirements can be planned. Review invoices to insure valid costs and maintain up do date files on expenses.

8. Project Planning and Design: Prepare planning documentation, permitting, design and cost estimates for District maintenance, repair and/or improvement projects.

9. Contracts: Oversee District contracts including construction and maintenance contracts, water quality monitoring, alum purchasing, etc.

10. Personnel: Oversee activities of the Aerator Technician and Flood Control Technician.

11. Roll: Prepare and Maintain Annual District Assessment Roll, calculating changes due to segregation requests and valuation changes.

12. Information Dissemination and Requests: Coordinate District activities with Newman Lake Flood Control Zone District Advisory Board and District property owners, and other agencies (NRCS, Ecology, Fish and Wildlife, etc.). Organize and/or attend District and community meetings and respond to questions, comments and information requests regarding district activities. Provide information to district residents via mailings, newsletter articles, etc.

Newman Lake Flood Control Zone District

Job Descriptions: District Technicians

These positions are "extra-help" positions. Hiring priority to District residents.

Compensation: Hourly, at rate of $12.50/hour (min. 15 hours/ month for Flood Control Technician) plus reimbursement for documented vehicle mileage.

Benefits: Benefits are limited to the payment of employer's portion of Social Security and Workman's compensation. No other benefits will be provided.

Flood Control Technician - opens and closes the water control gates, maintains records of lake levels and routine maintenance activities, visually inspects flood control facilities and performs routine cleaning and maintenance including greasing gate operating hardware, cleaning trash racks, installing gages, painting, etc.

Aerator Technician – Performs daily inspection and takes gage readings of equipment in Aerator building daily, turns equipment on and off and as directed, assists alum supplier with deliveries, and calls Newman Lake Engineer for problems requiring repairs or service. Also includes minor maintenance and trouble shooting of Alum injection system. Other duties include the facility winterization procedures, keeping the building neat and tidy and assisting with removing and reinstalling the buoys seasonally. During winter when equipment is not operating, the building shall be checked on twice a month and shafts turned on the compressors.

D-8: ADVISORY BOARD POSITION APPLICATION FORM

ADVISORY BOARD MEMBERSHIP APPLICATION
NEWMAN LAKE FLOOD CONTROL ZONE DISTRICT

Applicant's Name: _____ Date: _____

Daytime Phone No.: _____

Address: _____

_____

Employment Information:

Present Employer: _____ How Long ? _____

Duties/Responsibilities: _____

_____

_____

Summary of Previous Employment: _____

_____

_____

_____

Educational Background:

High School Graduate or GED? _____

College or University Summary (name of school(s), major(s), degree(s) obtained): _____

_____

Additional Education/Training: _____

_____

Community Related Activities: _____

_____

_____

_____

(over)

Information on Residency/Property Ownership within the District (check all that apply):

____ Year-round Resident	_____ Forest Land Owner
_____ Seasonal Resident	_____ Lakefront / Near Lake Property Owner
_____ Farmer/Agricultural Land Owner	_____ Recreational User of Newman Lake

Please explain why you wish to be a member of the Newman Lake Flood Control Zone District Advisory Board and any special interests you may have:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Signature of Applicant

Note: All information is subject to public disclosure except phone number and address

APPENDIX E: FLOOD CONTROL FACILITY OPERATING INFORMATION

E-1: FLOOD CONTROL GAGE RECORD FORM

E-2: LAKE LEVEL CURVE AND TABLE OF SUMMER LAKE ELEVATIONS

E-3: HSPF MODEL OF RUNOFF FORECASTS BASED ON SNOW PACK LEVELS

E-4: RULES OF THUMB FOR LAKE LEVEL CONTROL

E-5: FLOOD CONTROL FACILITY INSPECTION FORMS

E-1: FLOOD CONTROL GAGE RECORD FORM

NEWMAN LAKE FLOOD CONTROL ZONE DISTRICT GAGE READINGS

DATE	LAKE	N GATE	S GATE	DITCH	PRIVATE BR	STARR BR	OST	MOFFATT	SINK	THOMPSON CK
TIME										
COMMENTS:										

DATE	LAKE	N GATE	S GATE	DITCH	PRIVATE BR	STARR BR	OST	MOFFATT	SINK	THOMPSON CK
TIME										
COMMENTS:										

DATE	LAKE	N GATE	S GATE	DITCH	PRIVATE BR	STARR BR	OST	MOFFATT	SINK	THOMPSON CK
TIME										
COMMENTS:										

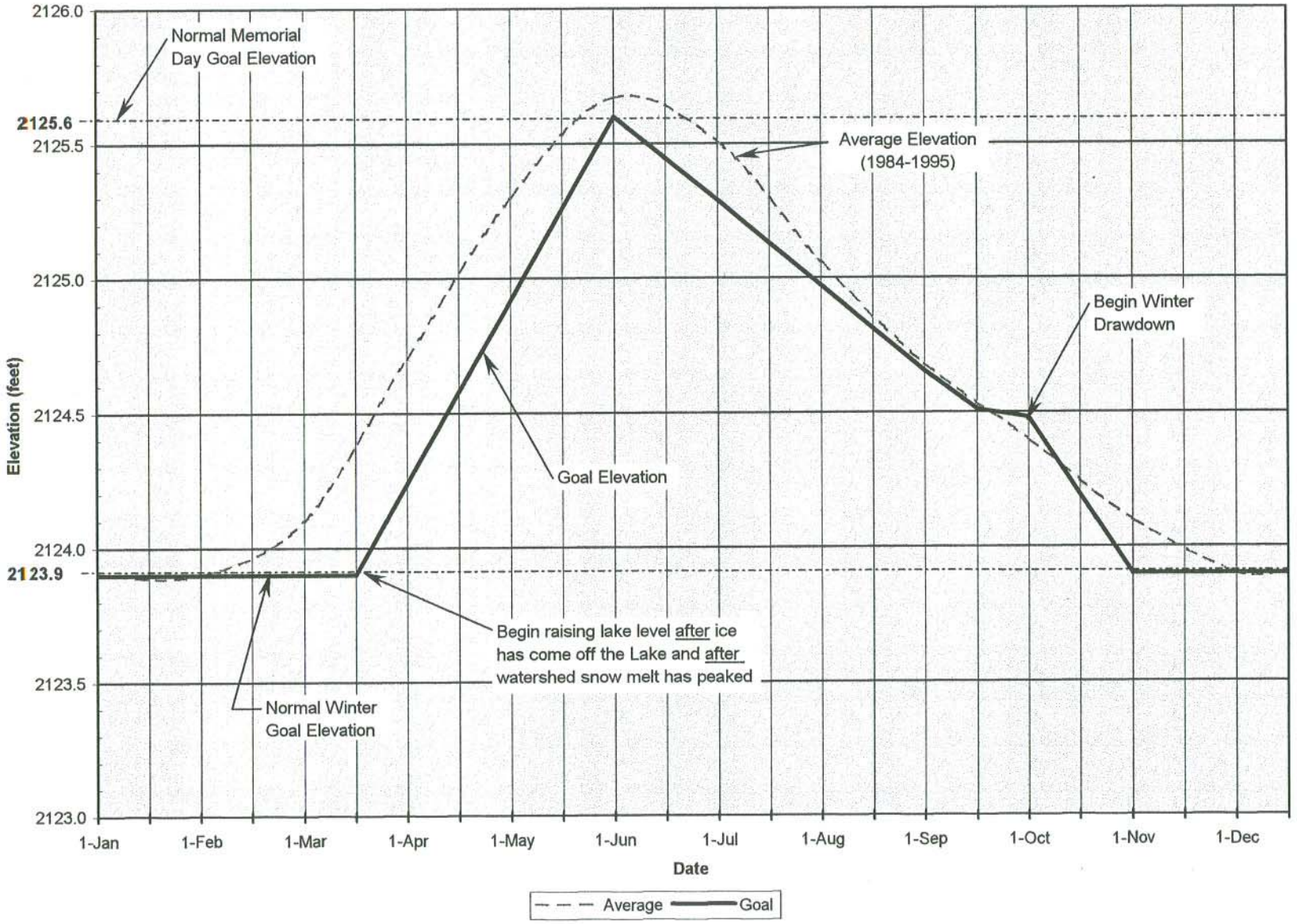
DATE	LAKE	N GATE	S GATE	DITCH	PRIVATE BR	STARR BR	OST	MOFFATT	SINK	THOMPSON CK
TIME										
COMMENTS:										

storm/NL/GageRecordsForm

E-1: FLOOD CONTROL GAGE RECORD FORM

E-2: LAKE LEVEL GOAL GRAPH
AND
TABLE OF SUMMER LAKE ELEVATIONS

Newman Lake Level - Goal Elevations



NEWMAN LAKE FLOOD CONTROL ZONE DISTRICT
TABLE OF SUMMER GOAL LAKE ELEVATIONS

Date	Goal		Date	Goal		Date	Goal	2001	Date	Goal	2001	Date	Goal	2001
								Actual			Actual			Actual
1-Jun	2125.60		1-Jul	2125.29		1-Aug	2124.97		1-Sep	2124.65		1-Oct	2124.48	
2-Jun	2125.59		2-Jul	2125.28		2-Aug	2124.96		2-Sep	2124.64		2-Oct	2124.46	
3-Jun	2125.58		3-Jul	2125.27		3-Aug	2124.95		3-Sep	2124.63		3-Oct	2124.44	
4-Jun	2125.57		4-Jul	2125.26		4-Aug	2124.94		4-Sep	2124.62		4-Oct	2124.42	
5-Jun	2125.56		5-Jul	2125.25		5-Aug	2124.93		5-Sep	2124.61		5-Oct	2124.40	
6-Jun	2125.55		6-Jul	2125.24		6-Aug	2124.92		6-Sep	2124.60		6-Oct	2124.38	
7-Jun	2125.54		7-Jul	2125.23		7-Aug	2124.91		7-Sep	2124.59		7-Oct	2124.36	
8-Jun	2125.53		8-Jul	2125.22		8-Aug	2124.90		8-Sep	2124.58		8-Oct	2124.35	
9-Jun	2125.52		9-Jul	2125.21		9-Aug	2124.89		9-Sep	2124.57		9-Oct	2124.33	
10-Jun	2125.51		10-Jul	2125.20		10-Aug	2124.88		10-Sep	2124.56		10-Oct	2124.31	
11-Jun	2125.50		11-Jul	2125.19		11-Aug	2124.87		11-Sep	2124.55		11-Oct	2124.29	
12-Jun	2125.49		12-Jul	2125.18		12-Aug	2124.86		12-Sep	2124.54		12-Oct	2124.27	
13-Jun	2125.48		13-Jul	2125.17		13-Aug	2124.85		13-Sep	2124.53		13-Oct	2124.25	
14-Jun	2125.47		14-Jul	2125.16		14-Aug	2124.84		14-Sep	2124.52		14-Oct	2124.23	
15-Jun	2125.46		15-Jul	2125.15		15-Aug	2124.83		15-Sep	2124.51		15-Oct	2124.21	
16-Jun	2125.45		16-Jul	2125.14		16-Aug	2124.82		16-Sep	2124.50		16-Oct	2124.19	
17-Jun	2125.44		17-Jul	2125.13		17-Aug	2124.81		17-Sep	2124.50		17-Oct	2124.17	
18-Jun	2125.43		18-Jul	2125.12		18-Aug	2124.80		18-Sep	2124.50		18-Oct	2124.15	
19-Jun	2125.41		19-Jul	2125.11		19-Aug	2124.79		19-Sep	2124.50		19-Oct	2124.13	
20-Jun	2125.40		20-Jul	2125.10		20-Aug	2124.78		20-Sep	2124.50		20-Oct	2124.11	
21-Jun	2125.39		21-Jul	2125.09		21-Aug	2124.77		21-Sep	2124.50		21-Oct	2124.09	
22-Jun	2125.38		22-Jul	2125.08		22-Aug	2124.76		22-Sep	2124.50		22-Oct	2124.07	
23-Jun	2125.37		23-Jul	2125.07		23-Aug	2124.75		23-Sep	2124.50		23-Oct	2124.05	
24-Jun	2125.36		24-Jul	2125.06		24-Aug	2124.74		24-Sep	2124.50		24-Oct	2124.04	
25-Jun	2125.35		25-Jul	2125.04		25-Aug	2124.73		25-Sep	2124.50		25-Oct	2124.02	
26-Jun	2125.34		26-Jul	2125.03		26-Aug	2124.72		26-Sep	2124.50		26-Oct	2124.00	
27-Jun	2125.33		27-Jul	2125.02		27-Aug	2124.71		27-Sep	2124.50		27-Oct	2123.98	
28-Jun	2125.32		28-Jul	2125.01		28-Aug	2124.70		28-Sep	2124.50		28-Oct	2123.96	
29-Jun	2125.31		29-Jul	2125.00		29-Aug	2124.69		29-Sep	2124.50		29-Oct	2123.94	
30-Jun	2125.30		30-Jul	2124.99		30-Aug	2124.67		30-Sep	2124.50		30-Oct	2123.92	
			31-Jul	2124.98		31-Aug	2124.66					31-Oct	2123.90	

E-3: HSPF MODEL OF RUNOFF FORECASTS BASED ON SNOW PACK LEVELS

M E M O R A N D U M

DATE: June 23, 1997

TO: Marianne Barrentine, P.E.

FROM: Steve M. Worley, P.E.

RE: Newman Lake HSPF Model

CC: Tammie Williams, Brenda Sims

Back in March of last year the Water Resources Section was working on the Chester Creek Watershed Plan with CH2M Hill. The HSPF continuous hourly precipitation/runoff/snowmelt simulation model was set up to study the effects on the watershed. Unfortunately, the winter of 1995-96 did not provide adequate snowmelt data for the Chester Creek watershed. This information was critical for the model and the watershed plan.

At about the same time the Newman Lake Flood Control Zone District was in need of a better way to forecast the amount of runoff to Newman Lake during the spring runoff/snowmelt events. The NRCS (formerly the SCS) and the NLFCZD had been keeping records of winter snow depths and water content for approximately 13 years. This was done with two snow courses (now three) and one snow telemetry (snotel) site put in when the NRCS worked on the design of the outlet structure for Newman Lake.

Because both watersheds needed snowmelt/runoff information and Newman Lake was the only watershed with historical snow data the idea of doing an HSPF model on the Newman Lake watershed was born. Newman Lake would get a forecasting model and Chester Creek would get snowmelt information that could be translated to the Chester Creek watershed.

Hydmet, Inc., a subconsultant for CH2M Hill preparing the HSPF model for Chester Creek, was hired to prepare the model. Hydmet, Inc. is a Hydrology, Meteorology, Hydraulic Engineering firm in Palo Cedro, California.

The cost of the HSPF model for Newman Lake was estimated to be $2000. The Newman Lake portion of the HSPF model was paid for by the NLFCZD while the translation of the information to the Chester Creek Watershed Plan was paid for by the county. To date the NLFCZD has paid $1500. The remaining $500 is for additional consultation from Hydmet as needed.

Attached are the scope of services for Hydmet and the results of the HSPF model with forecasting tables for the months of January through April. I believe the results and tables are self-explanatory.

I trust this information is helpful. If you need additional information regarding the model or its results you can either see me or call Jack Humphrey of Hydmet at (916) 547-3403.

ATTACHMENT "A"
SCOPE OF SERVICES

NEWMAN LAKE HSPF MODEL RUNOFF FORECASTING

The HSPF continuous hourly precipitation/runoff/snowmelt simulation model has been set up for the Newman Lake watershed. Data files are available for water years 1949 through 1995 (47 years). The model was calibrated to lake inflow estimated from gate settings at the outlet works.

Snowmelt runoff in January-June is strongly correlated with observed snowpack water content at the Ragged Ridge snow course. Measurements at Ragged Ridge are normally available on approximately January 1, February 1, March 1, and April 1.

Specifically, the Consultant shall:

1. Derive statistical models to forecast monthly runoff to Newman Lake for 10%, 50% and 90% exceedence, corresponding to dry, average and wet precipitation periods using the HSPF simulated snowpack and runoff model results and the observed Ragged Ridge snow course average water content.

2. Provide four models:

   a) January 1 model to forecast monthly runoff for January through June

   b) February 1 model to forecast monthly runoff for February through June

   c) March 1 model to forecast monthly runoff for March through June, and;

   d) April model to forecast monthly runoff for April through June.

   The models will consist of tables providing monthly inflow in acre-feet.

3. Provide forecasting tables and a description of their use

4. Provide consultation on the use of the models as required by District Staff.

Cost Estimate:

Engineer	4 hr. @ $70	$280.00
Technician	80 hr. @ $15	$1200.00
Expenses		$20.00
Consultation	$70/hr. as needed	$500.00
Total:		$2000.00

HYDMET, Inc.

Hydrology, Meteorology, Hydraulic Engineering
9434 Deschutes Road, Suite 204
Post Office Box 678, Palo Cedro, CA 96073
Telephone (916) 547-3403 (Home 547-4743)

May 31, 1996

Steve M. Worley, P.E.
Newman Lake Flood Control Zone District
c/o Spokane County Public Works
Division of Engineering and Roads
1026 West Broadway Avenue
Spokane, WA 99260-0170
509-456-0170
Fax 324-3478

Subject: Newman Lake HSPF Model Runoff Forecasting

PURPOSE

The purpose of this investigation was to provide statistical runoff forecasting models for inflow to Newman Lake using observed snowpack water content.

INTRODUCTION

The HSPF precipitation/runoff model was originally developed as the Stanford University Watershed Model in the 1960's. In 1970 Hydrocomp Inc. of Palo Alto, California wrote an IBM PL1 computer language version with snowmelt algorithms provided by Eric Anderson of the National Weather Service. In 1988 Hydrocomp, Inc. wrote a fortran computer language version for the U.S. Environmental Protection Agency, hence HSPF (Hydrocomp Simulation Program Fortran). The current version 10.10 is dated December 1993 and can be obtained from: U.S.E.P.A., Center for Exposure Assessment Modeling, 960 College Station Road, Athens, GA 30605-2720 (Telephone 706-546-3549). Meteorological input files for version 10.10 use a data base program called Annieide for storage and assessing. This program is also available from USEPA.

DATA FILES

HSPF requires continuous meteorological records of air temperature, dew point temperature, wind speed, solar radiation, precipitation, and evaporation. Hourly records of precipitation, temperature and wind speed were obtained from Spokane Airport (Geiger Field) for October 1948 through February 1996 (48 years). An empirical program was written to convert cloudiness data at Spokane Airport to values of solar radiation. Daily and monthly estimates of pan evaporation were obtained for Spokane Airport and Lind, Washington. Most of these records were taken from a National Weather Service CDROM database purchased from EarthInfo, Inc., Boulder, Colorado.

Some of the meteorological files for the January 1995 through February 1996 period were obtained from the Spokane County weather station in Chester Creek watershed.

MODEL SETUP

The Newman Lake watershed was modeled by HSPF using four elevation zones. The two lower zones, 2400 and 2800 ft, were similar to elevation zones in the Chester Creek HSPF model, so that calibration parameters for these zones were already available. The two upper zones, 3250 and 4700 ft, were used to simulate snowpack water content observed at Ragged Ridge snowcourse and Quartz Mountain snow pillow, respectively. Ragged Ridge snow course data were available for January 1, February 1, March 1 and April 1 for 1982 through 1993. Quartz Mountain snow pillow data were available daily for 1986 through 1995.

Estimates of lake inflow were used to make approximate model calibrations. Stage records for Thompson Creek were available for some late winter and spring periods, but without a flow-stage rating curve they were unusable. Theoritical estimates of discharge through the Newman Lake outlet structure gates were available, indicating a flow of approximately 1 cfs per turn of both gate control valves. However, records of periodic turns of the gate control valves were inconsistent with accumulated turns, and no absolute gate setting values were recorded to allow corrections. The most complete data were for January through July periods of 1990 and 1991.

MODEL CALIBRATION

The most important parameter in the calibration process was one relating precipitation at Newman Lake watershed to Spokane airport. Comparisons of Spokane Airport precipitation to snowpack water content and to a short precipitation record near Newman Lake indicated precipitation was 2.2 to 2.5 times higher in Newman Lake watershed, depending on elevation, for the average of the 1949-1996 winter seasons. The attached figure compares simulated snowpack water content of HSPF Zone 1 to Quartz Mountain snow pillow and HSPF Zone 2 to Ragged Ridge snow course. Differences in snow water content between observed and simulated values could be attributed to differences in storm event precipitation between Spokane airport and the Newman Lake watershed. These difference were randomly distributed each year, high and low, and did not influence the mean values of the statistical predictions, only their confidence limits.

MODEL RESULTS

Tables 1-4 were developed from correlation plots of the Quartz Mountain snow pillow water content values and HSPF Zone 1 output to HSPF inflow to Newman Lake for the 1949-1996 period (48 years). Ragged Ridge snowpack water content could not be used as a predictor, since for many years snow cover was gone at that

elevation prior to April 1. Table 1 provides forecasts for January 1; Table 2 for February 1; Table 3 for March 1; and Table 4 for April 1.

For example, using Table 2, a 20 inch observed water content value at Quartz Mountain snow pillow, on or near February 1, would indicate a 50 percentile average runoff for February 1 through June 30 of 11,800 ac ft, with a 10 percentile dry year of 7,000 ac ft and a 90 percentile wet year of 19,200 ac ft. The table shows 20,000 ac ft or greater as the 90 percentile runoff for all snow pillow values over 19 inches, since there were no occurrences in the 1949-1996 record of a wet spring after 19 inches had already accumulated at the snow pillow by February 1, and extrapolation of the correlation plot could not be justified.

Newman Lake inflow predictions of 7,000 ac ft to 19,200 ac ft with an average of 11,800 ac ft would appear to cover a wide range. However, National Weather Service long range forecasts of expected precipitation would allow one to select, with some confidence, values appropriate for dry, normal or wet spring precipitation forecasts.

COMMENTS

The accuracy of the HSPF calibration was quite dependent on transfer of runoff parameters from the Chester Creek model. A program designed to collect data for model calibration purposes specifically for Newman Lake watershed would be desirable. A new weather station or the Chester Creek weather station could be set up at Newman Lake, with a stage measurement for Thompson Creek. More importantly, a record should be kept of the gate setting (actual gate opening, not turns) for the outlet works whenever the gate setting is changed. A few flow measurements, particularly at high flows, would allow development of stage rating curves for Thompson Creek and gate rating curves for the outlet works. Even one season of collecting this type of data would allow recalibration of the HSPF model and increased accuracy and confidence in the snowpack and runoff simulations.

ATTACHMENTS

Attached are magnetic disks which provide the input file, data base and HSPF program.

John H. Humphrey, Ph.D., P.E.
Hydrologist, Civil Engineer

SNOW PACK CALIBRATION
OCTOBER 1981–FEBRUARY 1996

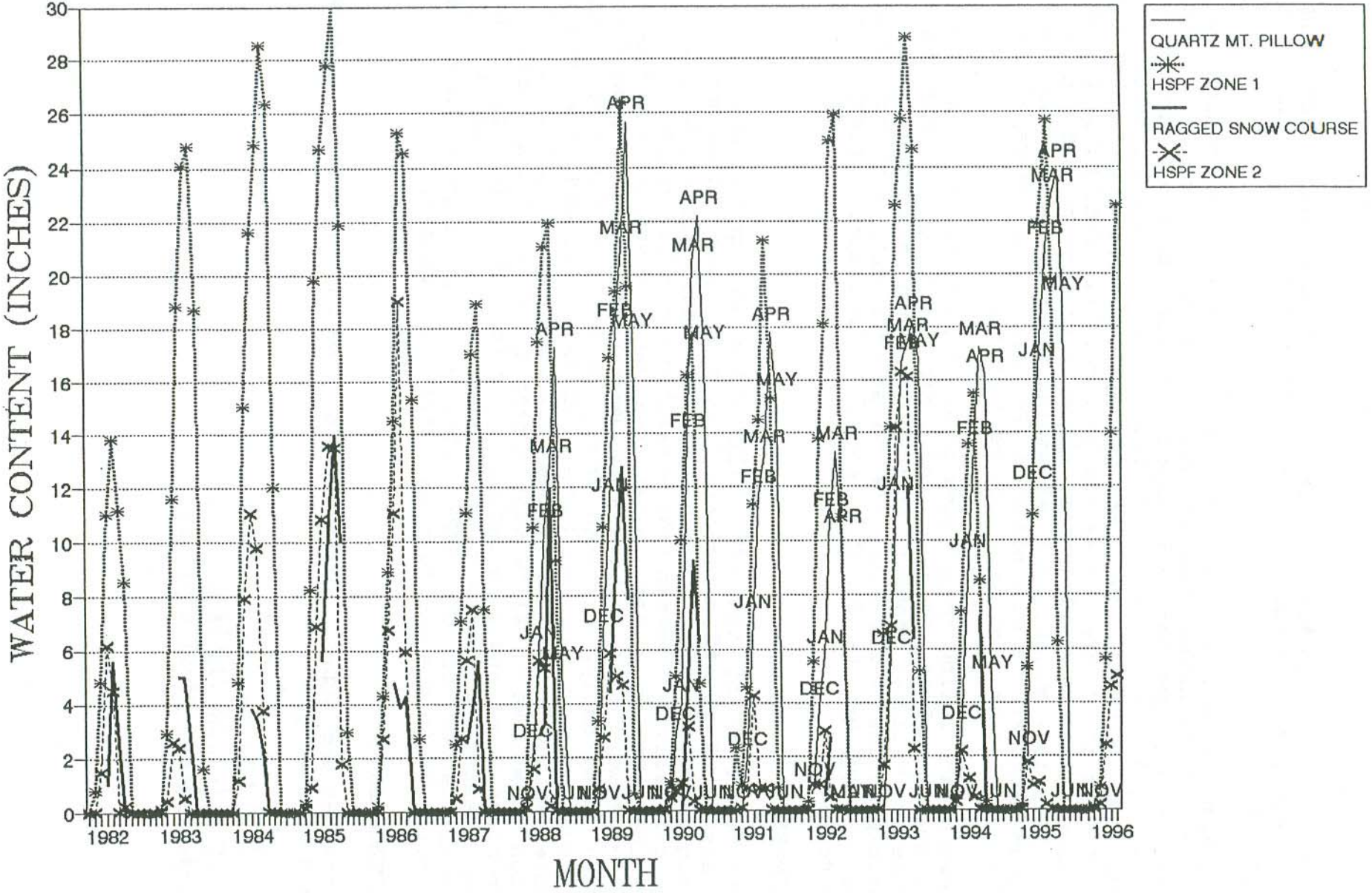


TABLE 1.
JANUARY 1 FORECAST
RUNOFF TO NEWMAN LAKE

QUARTZ MT. SNOW PILLOW (INCHES)	10 PERCENTILE DRY (AC FT)	50 PERCENTILE AVERAGE (AC FT)	90 PERCENTILE WET (AC FT)
1			
2	700	2300	6400
3	1200	2800	6600
4	1600	3400	7500
5	2200	4200	9000
6	2800	5200	10400
7	3500	6300	11800
8	4400	7500	13500
9	5400	8600	15100
10	6200	9800	16900
11	7100	11000	18400
12	8000	12000	20000
13	8900	13000	20000
14	9800	14100	20000
15	10600	15200	20000
16	11600	16400	20000
17	12500	17500	20000
18	13400	18600	20000
19	14300	19800	20000
20	16200	20000	20000

INFLOW

TABLE 2.
FEBRUARY 1 FORECAST
RUNOFF TO NEWMAN LAKE

QUARTZ MT. SNOW PILLOW (INCHES)	10 PERCENTILE DRY (AC FT)	50 PERCENTILE AVERAGE (AC FT)	90 PERCENTILE WET (AC FT)
1			
2			
3			
4	600	1600	5000
5	800	1800	5200
6	1000	2200	5400
7	1200	2400	5600
8	1400	2800	5800
9	1600	3200	6400
10	1900	3700	7300
11	2200	4100	8600
12	2600	4700	9800
13	3000	5600	10900
14	3300	6500	12000
15	3800	7300	13200
16	4200	8200	14500
17	4800	9100	15600
18	5400	10000	16800
19	6200	10900	18000
20	7000	11800	19200
21	7700	12600	20000
22	8400	13500	20000
23	9100	14200	20000
24	9800	15000	20000
25	10500	15900	20000
26	11300	16700	20000
27	12000	17600	20000
28	12800	18400	20000
29	13500	19300	20000
30	14200	20000	20000
31	15000	20000	20000
32	15800	20000	20000
33	16500	20000	20000
34	17100	20000	20000
35	17900	20000	20000

TABLE 3.
MARCH 1 FORECAST
RUNOFF TO NEWMAN LAKE

QUARTZ MT. SNOW PILLOW (INCHES)	10 PERCENTILE DRY (AC FT)	50 PERCENTILE AVERAGE (AC FT)	90 PERCENTILE WET (AC FT)
1			
2			
3			
4	160	600	4800
5	200	780	4860
6	280	960	4940
7	360	1120	5000
8	440	1300	5100
9	520	1480	5200
10	600	1660	5300
11	720	1840	5600
12	840	2000	6000
13	960	2400	6500
14	1080	2700	7000
15	1200	3000	7400
16	1400	3500	7900
17	1600	4000	8400
18	2000	4500	8800
19	2500	5000	9300
20	2900	5500	9700
21	3400	6000	10200
22	3800	6500	10600
23	4200	7000	11100
24	4600	7400	11600
25	5000	7800	12000
26	5500	8400	12500
27	6000	8800	13000
28	6400	9400	13400
29	6800	9600	13900
30	7400	10200	14300
31	7700	10800	14800
32	8200	11200	15200
33	8700	11600	15600
34	9000	12100	16100
35	9500	12500	16600
36	10000	13000	17000
37	10400	13500	17500
38	10900	14000	18000
39	11400	14500	18400
40	11800	15000	18900

TABLE 4.
APRIL 1 FORECAST
RUNOFF TO NEWMAN LAKE

QUARTZ MT. SNOW PILLOW (INCHES)	10 PERCENTILE DRY (AC FT)	50 PERCENTILE AVERAGE (AC FT)	90 PERCENTILE WET (AC FT)
1			
2			
3			
4			
5	200	700	2800
6	380	800	2900
7	440	900	3000
8	500	1100	3100
9	560	1200	3200
10	620	1300	3300
11	680	1500	3500
12	760	1600	3800
13	800	1800	4000
14	880	2000	4400
15	940	2200	4700
16	1000	2400	5000
17	1100	2600	5400
18	1200	2800	5700
19	1320	3000	6000
20	1420	3250	6400
21	1500	3500	6700
22	1600	3750	7000
23	1800	4000	7300
24	1900	4340	7600
25	2100	4680	7900
26	2400	5000	8200
27	2600	5200	8500
28	3000	5500	8800
29	3200	5800	9100
30	3500	6200	9500
31	3800	6500	9800
32	4100	6800	10200
33	4300	7100	10500
34	4600	7400	10800
35	4800	7600	11200
36	5100	7900	11500
37	5400	8200	11800
38	5600	8500	12100
39	5900	8800	12500
40	6200	9100	12800
41	6400	9400	13100
42	6700	9700	13400
43	7000	10000	13800
44	7300	10400	14100
45	7500	10600	14400

E-4: RULES OF THUMB FOR LAKE LEVEL CONTROL

E-4: RULES OF THUMB FOR LAKE LEVEL CONTROL

The following is a summary of helpful information for lake level control:

1. Lake outlet gate capacity: 6 cfs flow per each 0.1 foot opening of both gates or,
   3 cfs flow per each 0.1-foot opening in one gate

Explanation: With both 3' high gates wide open with the lake level at the top of the weir the flow through both gates is 175cfs. Therefore as a rule of thumb each 0.1' of opening of both gates will add 175/30 or about 6 cfs to the outlet flow.

2. Lake level control rate: Each 6 cfs of flow or each 0.1 feet of gate opening will lower the lake an additional 0.01 feet per day

   At the maximum flow through the gates of 175cfs, the lake will take about 3-½ days to drop one foot or will drop about 0.3 feet/day

Explanation: Newman Lake is approx. 1200 acres in surface area. To drop the lake an additional 0.01 feet per day would require the release of 1200x0.01 or 12 acre-feet/day. One cfs(cubic feet/sec) is equal to 2 acre-feet per day, so releasing 6 cfs will drop the lake 0.01 feet/day.

E-5: FLOOD CONTROL FACILITY INSPECTION FORMS

NEWMAN LAKE FLOOD CONTROL ZONE DISTRICT

FLOOD CONTROL FACILITIES INSPECTION REPORT

DATE: _____

Participants: _____

Outlet Structure:

Gates: _____

Gages: _____

Structural Integrity: _____

Ditch / Rip Rap: _____

Log Boom: _____

Trash Rack: _____

Other: _____

Lake Dike:

Outlet Channel:

Outlet Structure to Starr Rd. Bridge:

Starr Rd. Bridge to Moffat Rd.:

Moffat Rd. to Sink:

Gages:

Outlet Channel Control Gate:

Gates:

Gages:

Structural Integrity:

Ditch / Rip Rap:

Other:

Sink Area:

Condition of Exposed Gravels:

Dikes:

Gages:

Other:

APPENDIX F: WATER QUALITY FACILITY OPERATING INFORMATION

F-1: AERATOR SYSTEM START-UP AND SHUT-DOWN PROCEDURES

F-2: COMPRESSOR GAGE RECORD FORM

F-3: AERATOR PUMP RECORD FORM

F-4: ALUM INJECTION SYSTEM OPERATING PLAN

F-1: AERATOR SYSTEM START-UP AND SHUT-DOWN PROCEDURES

NEWMAN LAKE FLOOD CONTROL ZONE DISTRICT

NEWMAN LAKE AERATOR

START- UP/ SHUT-DOWN PROCEDURES:

1. **Spring Start-up:**

    a. **Check and make sure all breakers and motor controllers are "on".**
    b. **Warm up dryer for a minimum of ½ hour prior to starting system.**
    c. **Reinstall covers over compressor shafts.**
    d. **Plug in dryer and tank automatic drain valves and test their operation.**
    e. **Pump start-up: Check voltage gage to insure full power is available on all three phases. Turn switch on side of controller to Manual and push start button. Green light should come on.**
    f. **Turn on both AirSeps.**
    g. **Follow pipes and check to make sure that all valves in system (after compressor discharge) are open. The AirSep discharge line may be only partially open as it is adjusted for proper operation. Leave as is!**
    h. **Open first compressor discharge air valve slightly to allow unit to have back pressure while it builds up system pressure.**
    i. **Push first Compressor Start button.**
    j. **When system pressure passes 70 psi, open discharge check valve completely.**
    k. **Repeat steps h-j for second Compressor.**
    l. **Push reset button on Airseps if they do not begin cycling after air compressors are on line.**
    m. **Note: If only one compressor is on-line, use only one AirSep. Normally this should be the right AirSep for the right compressor, and the left AirSep for the left compressor. This will keep hours of use the same as the matching compressor.**
    n. **After system pressure has had a chance to build, check to make sure pressures and temperatures on all equipment is in proper operating ranges. Complete record forms.**

2. **Start-Up after Power Outage:**

    a. **Check to see if pump is on (green light on controller box is on). If not, restart by pushing reset and then start buttons on front of controller box.**
    b. **Complete steps h-n above to restart both compressors and AirSeps.**

3. **Temporary Shut-Down:**

a. **Slowly close first compressor discharge valve to allow unit to throttle back to under 20% capacity.**
b. **Once unit is under 20% capacity, turn the compressor off. This will stop the unit from back spinning and flooding oil back through the air filter.**
c. **Turn off AirSeps**
d. **Turn off pump, if alum system is not operating.**
e. **Leave Drier and Drain valves on.**

4. **Winter Shut Down:**

a. **If not already done, complete steps a-d in Temporary shut-down procedures above.**
b. **Turn off Drier.**
c. **Leave Drain valves on for at least one-day after shut-down to insure water is out of the system. Test before unplugging.**
d. **Switch off breakers to all equipment no longer in use.**
e. **Turn on breakers to baseboard heaters and set at 50 degree min. setting. Make sure nothing is stored against the heaters before turning on!!**
f. **Remove covers over compressor shafts.**
g. **Turn compressor shafts ¼-½ turn twice a month during winter shut-down period to prevent shaft seals from becoming distorted.**

F-2: COMPRESSOR GAGE RECORD FORM

We value your business. Let us help you keep your system in top shape by providing us with your operating data. We will notify you if we see that any readings are abnormal.

REVISED (4/98)

FIRM/PLANT NAME NEWMAN LAKE AERATOR COMPRESSOR MODEL

CONTACT NAME M. Barrentine SERIAL NO. 910606

PHONE 509-477-7443 FAX MONTH OF Aug 01

DAY	HOUR METER	AIR PRESSURE BEFORE	AIR PRESSURE AFTER	% CAPACITY	OIL PRESSURE BEFORE	OIL PRESSURE AFTER	AIR TEMP.	OIL TEMP.	OIL LEVEL	AIR FILTER CONDITION	TAKEN BY	MAINTENANCE PERFORMED
1	15744.3	115	110	98	70	69	218	181	ok	ok	JD	
2	15765.8	110	105	98	65	60	232	195	ok	ok	JD	
3	15791.4	110	105	98	65	60	232	194	ok	ok	JD	
4	15814.8	105	100	98	65	60	227	191	ok	ok	JD	
5	15832.0	105	100	98	65	60	227	192	ok	ok	JD	
6	15852.4	115	110	98	70	69	206	172	ok	ok	JD	
7	15860.4											OFF/CALL ROGER
8	15890.4	110	105	98	70	69	206	172	ok	ok	JD	
9	15919.5	105	100	98	70	69	206	172	ok	ok	JD	
10	15939.5	105	100	98	70	69	206	172	ok	ok	JD	
11	15963.5	110	105	98	70	69	227	190	ok	ok	JD	
12	15986.3	110	105	98	70	69	225	189	ok	ok	JD	
13	16003.3	~~90~~ 110	110	98	70	69	224	189	ok	ok	JD	
14	16035.2	115	110	98	70	69	232	189	ok	ok	JD	
15	16048.9	115	112	98	71	70	198	160	OK	OK	MB	8:50 AM
16	16060.9	115	112	98	70	69	199	165	ok	ok	JD	
17	16085.6	115	112	98	70	69	239	200	ok	ok	JD	
18	16125.4	115	110	98	70	69	229	180	ok	ok	JD	
19	16148.3	115	110	98	70	69	210	178	ok	ok	JD	
20	16173.4	95	90	98	60	59	212	176	ok	ok	JD	
21	16202.2	105	100	98	70	69	219	180	ok	ok	JD	
22	16217.2	115	110	98	70	69	200	161	ok	ok	JD	
23	16241.6	105	100	98	60	59	211	160	ok	ok	JD	
24	16270.1	115	110	98	70	69	210	175	ok	ok	JD	
25	16291.0	115	110	98	70	69	210	175	ok	ok	JD	
26	16321.3	120	119	98	70	69	211	176	ok	ok	JD	
27	16344.6	115	110	98	70	69	225	190	ok	ok	JD	
28	16364.0	100	95	98	63	62	204	167	OK	OK	MB	
29	16386.2	115	110	98	75	74	210	178	ok	ok	JD	
30	16409.0	~~115~~ 104	~~110~~ 116	98	65	64	204	114	ok	ok	JD	
31	16443.9	105	100	98	65	64	215	179	ok	ok	JD	

TURN OVER - FOR IMPORTANT SERVICE INTERVAL MAINTENANCE DATA.

F-3: AERATOR PUMP RECORD FORM

NEWMAN LAKE AERATOR- PUMP OPERATING RECORDS

MONTH/YEAR:_____

	AMPS			VOLTS			Rec'd	
DAY	L1	L2	L3	L1/L2	L2/L3	L1/L3	By	COMMENTS
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
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NOTES:

F-4: ALUM INJECTION SYSTEM OPERATING PLAN

NEWMAN LAKE FLOOD CONTROL ZONE DISTRICT

ALUM INJECTION SYSTEM

OPERATING PLAN

1. **PURPOSE:** The purpose of this plan is to provide overall and day-to-day operating guidance for the Newman Lake alum injection system. It is also provided to comply with NPDES Permit No. WA-0045438, issued June 28, 2002 and amended September 10, 2002 (Special Conditions paragraph S8). The Newman Lake Alum Injection System is owned and operated by the Newman Lake Flood Control Zone District (District). The Spokane County Board of County Commissioners administers the District. The District Administrator is the Spokane County Engineer. A Division of Engineering and Roads staff engineer is assigned to manage the District and its facilities, including the Alum Injection System.

2. **GOALS:** The ultimate goals of the Micro-Floc alum injection system at Newman Lake are to:
   a. Increase summer lake water clarity by reducing phosphorus availability, in turn reducing algae biomass.
   b. Reduce the absolute amount of blue-green algae, and lower the percentage that this group represents in the summer phytoplankton.

3. **HOW THE MICRO-FLOC ALUM INJECTION SYSTEM WORKS:**

A. Alum: Aluminum sulfate, $Al_2(SO_4)_3$ (Alum) has long been used to improve lake water quality. Application of alum to lakes has two main effects. One, it reacts with phosphorus in the water column to form aluminum phosphate, which makes phosphorus unavailable as a nutrient for growing algae. Two, once phosphorus reacts with the alum flow, the size of individual particle grows, and the alum/phosphorus floc eventually settles to the lake sediments. Here, the alum continues to provide benefits by preventing phosphorus from being recycled back into the lake water. In this way, the alum serves to work in conjunction with the oxygen system by reducing the net internal cycling of phosphorus.

B. Micro-Floc Alum: The Micro-Floc Alum Injection System at Newman Lake is designed to produce very small particles of alum floc that are continuously injected into the lake. Its primary benefit therefore is to remove phosphorus from the water column, the first effect noted above. This system, although experimental, appears to have several advantages over a more traditional one-time surface alum treatment. The small particle size serves to maximize the phosphorus removal efficacy. Smaller floc particles have lower settling velocities, longer residence times in the lake, with better opportunity for the aluminum to react with phosphorus. These factors should serve to optimize phosphorus removal rates per unit of alum and lower total alum requirements. The continuous

injection system also is able to have a longer lasting effect; the effectiveness of a one-time alum treatment is limited to about 5 years.

C. Distribution: Distribution of the alum floc depends on the oxygenator effluent (operation of the in-lake water distribution pump) and on the natural mixing processes in the lake itself. The oxygenator is designed to mix water (with high concentrations of oxygen from the Speece Cone) through the deep hypolimnion without disrupting the temperature stratification. Distribution of alum using this system while the lake is stratified will only be through the hypolimnion. However, maximum benefit of phosphorus removal, and subsequent effects on algae biomass, can best be achieved by disbursing the alum through the entire water column. This can only be accomplished during spring and fall turnover periods in the lake.

4. **OPERATING RATIONALE:** As described above, distribution of alum in the lake is best accomplished during turnover. Consequently, our operational procedure for the alum system is to allocate approximately one-third of the total annual alum supply to each turnover, with one-third retained as an operational reserve. NPDES fact sheet and permit limitations equate to a maximum total yearly dosage of 276 tons "dry" alum (101,445 gal. at 49% concentration). Of the two, spring turnover and fall turnover, alum injection during the spring will produce the most immediate benefits in algae biomass reduction. This is because the summer growing season follows immediately. During fall turnover, the algae populations are already on the decline, so benefits resulting from phosphorus removal in the fall are not fully realized until the upcoming growing season of the subsequent year.

   The one-third amount (92 tons or 183,900 lbs. dry alum or 33,815 gal. at 49% conc.) dedicated to turnover corresponds approximately to the maximum daily rate (1832 gal alum/day at avg. 49% conc.) applied over an 18 day period, as an "average" duration of turnovers. This 1/3 amount spread out over a 30-day turnover would be a dosage of 1,127 gal./day at a avg. conc. of 49 %. This later dosage of 1,127 gpd gives us a reasonable maximum dosage rate for extended turnovers. Operational reserves can be used to extend this high rate over longer turnovers. Budgetary limitations usually make the total tons available for the year much less than the maximum 276 tons permitted.

   The 1/3 operational reserve can be used either to target high hypolimnetic phosphorus during summer, as identified by monitoring, or to continue alum introduction during turnovers that persist longer than one month or short summer turnovers caused by cool windy weather. If spread out over the late spring and summer, the 1/3 amount over a 140-day period equates to a daily dosage of 241 gal. Alum/day at avg. 49% concentration. Again budgetary limitations will probably lower this dosage.

5. **DESCRIPTION:**

   A. Facilities: The alum injection system at Newman Lake utilizes the previously installed hypolimnetic aeration system at the lake for housing of alum pumps and gauging, and distribution of

alum in the lake. The equipment is located in the Compressor Building at Newman Lake, located near the end of Sutton Bay Road, just above Sutton Bay Resort. Attachment A shows location. Sweetwater Technologies installed the system in April 1997.

A 4,100-gallon fiberglass above ground tank was installed next to the Compressor Building. The tank was rented from our alum supplier in 1997 and 1998. The District purchased the tank in March 1999. Alum is piped from there to the pumps inside the building and then to the micro-floc generators mounted on the aerator distribution pipe via ½' and ¾' flexible pipe. The small particle size (micro-floc) is achieved by injecting the alum into the micro-floc generators, a venturi device attached to exhaust ports on the aeration distribution pipe. The venturi increases the velocity of the water exiting the ports, causing a shearing action that breaks up the alum into small particles at the point of injection.

We have done several in-house upgrades since the original construction including:

1. Adding a distribution manifold and valves to allow better system maintenance and distribution of the alum.
2. Installing a solenoid valve on the discharge line to prevent warm weather siphoning from the tank into the lake when the pump was not operating.
3. Re-piping the alum suction line out the bottom to the tank to eliminate priming difficulties.
4. Installing a new single higher capacity air-diaphragm pump that has an easier time with the viscous alum solution especially in cold weather. The air-powered pump is operated off a portable compressor when the aerator compressors are not in operation.
5. Installing an ultrasonic tank level monitor (Mini Ranger by Milltronics) that operates a high level alarm (to prevent tank spill over during filling operations) and low level pump shut off valve (to prevent suction of floating debris in the tank). The ultrasonic tank level indicator (transducer mounted on top of the tank) replaced the plastic sight tube on the side of the tank that was susceptible to damage that could have caused a major alum spill. It is also much easier to read than the make shift sight tube.
6. Connecting a new spare alum line to replace the line that became plugged in the lake.

See Attachment A for site plans. See Attachment B and C for piping and electrical schematics. See Attachment D for photos.

B. Alum: Aluminum sulfate ($Al_2(SO_4)_3$) or Alum solution, is a mild acid (corrosive). All system piping and components must be corrosion resistant, either plastic (PVC or PE) or 316 stainless steel. The Material Safety Data Sheet for alum is provided as Attachment E. Alum does require some special precautions when handling. Workers should wear gloves and eye protection. OSHA classifies alum as a hazardous substance. Per CERCLA requirements, any spills over 5,000 lb. (dry) or about 1,000-gal. (wet) must be reported to local and state emergency planning committees. The Department of Ecology should be notified of any spill outside the building or containment. For detailed spill and safety procedures see Section 10.A and the MSDS sheet, Attachment E.

Because higher concentrations had caused some crystallization and clogging of pipes in the first year of operation, we limited our Alum concentration to 38-42%. However, we found we needed to use "pure" alum, which is alum made from refined raw materials. Alum that includes waste by-products

was determined unsatisfactory, as it did not meet DOE Water Quality discharge criteria. The level of metal contaminants including copper, silver, zinc and lead were exceeding limits even after dilution at the nozzle. When the purer alum solution is used the higher standard concentrations of 48-50% can be used in the system. This purer alum reduces the problems of crystallization, solids and precipitates from clogging the lines and valves.

Dosage calculations for Discharge Monitoring Reports will reflect changing concentrations for each delivery.

6. NPDES PERMIT OPERATIONAL REQUIREMENTS:

A. Background: The State of Washington Department of Ecology issued the NPDES Permit WA-0045438 on June 11, 1996. The initial permit was issued for a proposal by the District for a 3-year test pilot plan for operation of an alum injection system. The NPDES permit was extended until finally renewed for 5 years on June 28, 2002. This current effective permit was amended September 10, 2002. As described in the permit fact sheet, this pilot plan was based on a target of 80% phosphorus removal from the water column. The plan estimated operation during two 10-day turnover periods at a maximum dosage of 1832 gal alum solution/day (at 49% concentration) and 180-day operation period at about 360 gal alum solution/day. This equates to a total of about 101,440 gal or about 276 tons of dry alum over a yearly (6-7 month) operating cycle.

2 x 10 days x 1832 gal/day = 36,640 gal. (alum at 49% concentration)
180 days x 360 gal/day = 64,800 gal. " "
101,440 gal. or about 101,500 gal.

101,500 gal./yr. x 8.34 lb./gal. x 1.33 s.g. x .49 (# alum/# total) = 551,700 lb., or about 276 tons dry alum.

Turnovers in recent years have extended more than two weeks and operating rational has changed to about 1/3 annual usage per turnover (see section **4. Operating Rational**). Based on that, usage during a 30-day turnover, assuming the maximum permitted annual 101,500 gallons, would average about 1,130 gallons alum solution per day.

101,500 gal. x 1/3 / 30 days = 1,130 gal/day alum at 49% soln. or 6,130 lbs. dry alum.

The current permit reflects this change.

B. Dosage Limitations:

The Alum Injection operating limitations are as follows:

Limit	Gallons Alum @ 49% conc.	Pounds of "Dry" Alum	Pounds of Aluminum	Pounds of Sulfate
Maximum Daily	1,832	9,960	900	4,800
Maximum Yearly Total	101,500	551,700	49,700	265,000

Note: The gallons dosage in this table is just a guideline when the concentration of alum is around 49%. Pounds aluminum and sulfate are the levels regulated under the permit.

The gallons alum/day dosage limitations were based on an estimated 49% concentration and solution density of 11.1 lb./gal (8.34 lb./gal. density H_2O and 1.33 S.G.) The pounds of aluminum and sulfate limitations have been calculated based on 9% aluminum and 48% sulfate content. As each molecule of alum (Al_2SO_4) combines with 14.3 molecules of H_2O, giving alum a molecular weight of about 600. The original permit limitations were calculated in error because they did not take into account this hydration. See Attachment F for sample gallons Alum to pounds Aluminum conversions and molecular weight calculations.

Note: If there is no discharge on a given day, put a "0" on this day on the DMR. Do not leave flow column blank. This will indicate that the zero discharge is verified.

C. Monitoring Requirements: See paragraph 7.B.

D. Discharge Monitoring Reports: Discharge Monitoring Reports (DMRs) are due on the 15th of the month following the month of record. DMR (Excel spreadsheet) forms provided by the Eastern Office of the DOE are in Attachment G. These forms should be completed, signed by staff engineer, and paper copy mailed to:

Washington State Department of Ecology
Eastern Regional Office
Attn: Water Quality -Permit Coordinator
4601 N Monroe, Suite 202
Spokane, WA 99205

Daily discharge data for DMR's shall be based on 24-hr. day beginning at 12 AM. Since tank level readings are taken at various times on a daily basis the readings spreadsheet can be used to calculate the discharge. The spreadsheet uses the rate of the period immediately before the reading for first part of day. Then the rate based on period after that day's reading is used for balance of day. Some adjustments may need to be made when the tank is empty to match total flows with delivered amount.

For example, readings are taken as follows:

6/1	10:30 am	68.5 inches
6/2	12:45 pm	55.2 inches
6/3	9: 30 am	41.8 inches

Calculating the rate between 6/1 and 6/2:

(68.5- 55.2 inches) x 49 gal./in / (26.25 hours) = 24.8 gal/hour

And similarly the rate between 6/2 and 6/3:

(55.2 – 41.8 inches) x 49 gal/in / (20.75 hours) = 31.6 gal/hour

Therefore the discharge for 6/2/02 would be:

(12.75 hrs x 24.8 gal/hr) + (11.25 hrs. x 31.6 gal/hr.) = 316 + 355 = 671 gal.

E. Other Permit Submittal Requirements:

Annual State of the Lake Report: A summary of monitoring results and watershed and source control activities for the previous year due annually on Feb. 15th.

Watershed Scoping: This report shall emphasize a census / count of possible nutrient sources, a comparison with the 1997 stormwater control plan, and include panned actions to reduce effects. This report is due February 15, 2005.

Nutrient Budget And Cycling Analysis Report: An updated Nutrient Budget and Cycling Analysis Report shall be provided by February 15, 2006. This last nutrient budget was done as part of the Phase II Lake Restoration report. This will require watershed and other monitoring above the requirements of the permit.

See the NPDES permit on file in Newman Lake Engineers Office for further details on these submittals.

F. Permit Renewal: Application for renewal to the Department of Ecology is required 180 days prior to permit expiration, that is no later that December 28, 2006. Renewal of the permit is dependent on the continuance of nutrient source control efforts in the Newman Lake Watershed and the absence of negative effects on lake biota and water quality.

7. **MONITORING:** Lake and Alum system monitoring is required for several reasons:

- One, we need to monitor lake conditions to know when the lake is turning over for dosage adjustments;
- Two, we need to monitor lake water quality to determine impact and effectiveness of alum, progress toward goals, and make adjustments in dosing requirements;
- Three, we need to monitor system gages daily to determine actual alum injection dosage and any system mechanical or plumbing problems.

A. **Lake Conditions:** Monitoring of the temperature profiles for lake turnover begins in spring as soon as the lake can safely be accessed. Ice usually comes off the lake the last week of March or the first week of April. Temperature monitoring is done by WSU personnel, District staff and/or volunteers weekly (at a minimum) to determine beginning and end of turnover period in spring (usually late March, April and early May) and fall (usually late August or early September and into October).

Typically, the lake begins to turnover immediately as the ice melts in the spring. Duration of mixing will depend on spring weather. Warmer temperatures will induce rapid development of thermal stratification, while cooler temperatures and windy conditions will delay stratification and prolong mixing. Observations through the years have shown that spring turnover at Newman Lake usually ranges from one week to as long as 6 to 8 weeks. Unusual conditions may even eliminate the spring turnover. For example, the spring floods of 1997 brought large volumes of cold water into the lake in early April, immediately after ice-off. The cold water caused immediate temperature layering, and an especially pronounced stratification.

B. **Water Quality:** WSU is currently under contract with the District to do the monitoring of lake water quality and provide guidance on operation of the alum injection system. Minimum NPDES monitoring is as follows:

Tests	Sample Station*	Sampling Frequency	Sample Location	Sample Type / Reporting
PH, Conductivity, Dissolved oxygen, and Temperature	Midlake, Southeast, and North	Every two weeks during 1st month of operation, monthly during operating period, quarterly during shutdown	Water, at depths of 1.0 m, 2.0 m (4.0 m at midlake), and 1.0 m off bottom	Meter, monthly DMR
Total Phosphorus	" "	" "	" "	Grab, annual report
Soluble Reactive Phosphorus	" "	" "	" "	" "
ICP Metals Scan	" "	once yearly during fall turnover	" "	" "
ICP Metals Scan	" "	" "	Sediments	Ekman dredge or diver core, annual reports

* See map, Attachment A, page 2.

WSU performs additional monitoring of alkalinity, total solids, Secchi disk readings, nitrates, nitrites, benthic invertebrates and algae populations. These, along with phosphorus readings, allow us to monitor progress toward goals. Alkalinity and pH measurements allow for timely assurance that negative impacts of alum on lake chemistry or biota are not encountered. For example, a decrease

negative impacts of alum on lake chemistry or biota are not encountered. For example, a decrease of pH below 6.0 could be allowing elemental aluminum to become dominant in solution, which can become toxic to aquatic organisms.

C. **System Operation:** The Alum system will be monitored daily by the District's Aerator Technician or other trained staff, who will complete the readings form provided as Attachment H. Daily readings will be used to monitor dosing accuracy, calculate actual amount of alum and aluminum injected into the lake, and identify any mechanical system problems. This form is also used to record any system changes, e.g. temporary shut down for flushing or testing, etc. Input of this information into the alum readings spread sheet (Attachment I) along with delivery record information (date, specific gravity, concentration) will provide dosage information for Discharge Monitoring Reports.

D. **Alum**: Samples should be taken annually from the tank and analyzed for Aluminum content as well as other critical metals of concern to DOE. These metals currently include copper (Cu), silver (Ag), nickel (Ni), and lead (Pb).

8. **DOSING:** The Alum system dosage (rate of discharge) is primarily controlled by the timer for the number of minutes of pump operation during a ten-minute cycle. Actual alum discharges by the system will also depend on alum concentration and specific gravity, tank level, temperature, pump performance, etc. Getting the proper setting for the desired rate of discharge requires some trial and error. We have gotten about 100-150 gpd at a "1/4" and 180-210 gpd at "1/2" timer settings in the summer. These are typical summer trickle rates. In early spring, during turnover we have gotten about 900 - 1000 gpm at "3" and 1100-1300 gpm at a "4"-"5" timer setting. These are more typical spring and fall turnover dosage rates. Desired dosage will need to be determined by water quality conditions and available funding and should be coordinated with WSU personnel.

   Note: The timer should not be set for over 6.5 for more than few hours to avoid exceeding maximum daily permit limitations

   Air powered diaphragm pump capacity: The maximum rated capacity of the pump is 4 gpm with water, however with alum the maximum capacity is about 2.3 gpm. In practice flow varies from about 1.5 – 2.0 due to alum viscosity changes (mostly due to temperature), tank level, and pump air supply pressure. Air supply pressure to the pump can be adjusted with the regulator on the pump air supply port. The air supply pressure to the pump needs to be adjusted to the fluid properties to maximize efficiency and reduce wear and tear on the pump. The pump should be cycling without laboring, but not so fast that it is "slamming" (making excessive noise) as it cycles. In any case, do not increase air supply pressure past point when there is little increase in discharge (can be observed at flow gages on panel). In early spring or late fall this will usually be about 70-80 psi. In the summer optimal operating pressure will probably be about 50-60 psi. See pump operating instructions on file in NL Engineers office and Compressor Building for pump curves and more operating information.

   Alum viscosity: Alum viscosity fluctuates significantly with temperature and has a great impact on pump operation and dosage. A graph of alum viscosity vs. temperature is provided as Attachment L

Siphoning potential: Under some circumstances, e.g. warm temperatures and high tank level, the alum can continuously siphon out of the tank into the lake at a rate of up to 400 gpd (with both pump suction valves open). The alum line solenoid valve prevents this by insuring line is shut off when pumps are off. This has made dosing more accurate.

Actual alum dosage will be calculated based on daily tank level readings, and adjusted or estimated from delivery data when readings are not available. See section **6.D. Discharge Monitoring Reports** for calculation procedures.

Note: If concentrations of significantly less than 49% are used then gallon dosages must be adjusted accordingly. See Sample Calculations in Attachment F

9. **ALUM DELIVERIES:** Contact the Alum Supplier at least a week prior to first spring delivery requirement. The date the ice is finally melted from the lake is referred to as ice-off. Because ice-off is difficult to determine in advance, and starting system as soon as possible when spring turnover begins is critical, the initial tank fill should be made when temperatures warm and it looks like the lake is beginning to thaw. In case of cold nighttime temperatures, do not prime system until actual start up is planned. After start up, deliveries should be scheduled at least 2 days in advance, when possible. If contractor is not local, additional notice may be required.

   Tanker trucks cannot make it down the winding road to the storage tank therefore alum is delivered via a fill line (hose) down the hill from the road above. As the fill line has to cross private property to reach the tank, property owner permission is required. We have verbal permission from the current property owner for this use. Two people are utilized during the filling. A staff person is stationed at the tank to monitor tank level and fill process. The tanker operator controls tank fill from tanker truck above. They maintain contact by radio to insure quick response in case of tank overfilling or line breakage.

   The bill of lading gives the specific gravity, concentration and weight of alum delivered. Use this information and delivery invoice to complete Alum Delivery Spreadsheet, provided as Attachment I, to track total cost and dosage for the year.

10. OPERATING AND MAINTENANCE PROCEDURES

A. Safety Practices:

1. When contact with alum can reasonably be expected, e.g. during system startup or maintenance procedures, workers should wear eye protection and gloves.
2. An eye wash station shall be maintained in the building
3. When a staff member needs to enter the tank for maintenance, another staff member shall be present to stand watch outside the tank.
4. A sign with office and after-hours phone numbers shall be placed on the Compressor Building with District contract information in case passerby observes any problems.

B. Spill procedures:

1. Stop source of spill as soon as possible.
2. Any minor leaks or spills in the building can be cleaned up immediately with towels or absorbents and disposed of in garbage can.
3. Contain spill, especially outdoor spills, with absorbents, dirt berm, or other available materials to as small an areas as possible. These materials, including a shovel, are stored in the Compressor Building.
4. Notify Newman Lake Engineer (477-7443) or other supervisory staff at the Spokane County Div. of Engineering and Roads (477-3600) of spill, estimated amount and status. Any spill outdoors should also be reported to local DOE personnel (329-3536 or 329-3400)
5. Small spills should be shoveled into buckets for disposal at Transfer station as directed by Waste Dept. personnel. Alum may be allowed to dry before cleanup. In any case spill areas should be checked for white residual after drying to insure areas were cleaned up completely.
6. In the event of major spills (greater than 1,000 gal.), contact the Spokane County Safety Loss (477-6101) and State Emergency Spill Response (800-258-5990). See Attachment E for the MSDS sheet.

B. Start Up Procedures:

1. Visually inspect system to make sure all system piping and components are reconnected properly after winter shutdown. Prior to first alum delivery, visually inspect tank to make sure it is clean and clear of debris.
2. Make sure all suction valves and discharge valves to discharge lines being used are open, including outside tank shut off, main shut off in bldg., and both pump isolation valves. Make sure drain lines are closed. Refer to piping schematic, Attachment B for valve location.
3. Plug in the surge protector restore power to the MiniRanger and check settings to insure proper pump and alarm on/off settings. See MiniRanger manual in Compressor Building for instructions and proper settings.
4. Make sure empty 5-gal. buckets are placed under drain lines that may be used to prime the system.
5. Turn on in-lake distribution pump if not already on for aerator system.

6. Set timer to "on" for continuous operation, plug system into wall plug and connect air supply to pump. If small compressor is being used for pump air supply, make sure dryer is on-line to prevent ice up.
7. If after a few minutes the pumps are unable to prime, pump into bucket at panel until air has been sufficiently flushed out. Then reopen discharge to lake and shut drain.
8. If it looks like system is operating properly, reset timer to setting for proper dosage (see section **8. Dosing**). If not, see troubleshooting procedures.

C. Shut-Down Procedures

Temporary (less than a week):

1. Unplug system from wall. Disconnect air supply from pump. Close main shut-off, tank shut-off, and line discharge shut off valves.

Mid-season:

1. After alum is used up in tank, fill tank ½ full of water from hydrant by building.
2. Restart system and run until tank level is down to 6 inches (automatic shut off). This will make it easier to test and re-prime at next start up.
3. If alum is not used up in the tank, shut tank and main suction shut off valve and flush pump and discharge lines with about 100 gallons of water (run for about 30 minutes) This can be done easily by suctioning out of drain line and bucket just upstream of the pump. Bucket can be kept filled with hose from the hydrant
4. Unplug the system from the wall and close main shut-off, tank shut off, and line discharge shut off valves.

End-of-Season (Winter) Shut-Down:

1. After alum is used up in tank, fill tank ½ full of water from hydrant by building.
2. Restart system and allow to run "dry". Repeat procedure filling tank again ½ full to dilute alum as much as possible and pumping tank out as low as possible (about 5.5 inches).
3. Turn off in-lake distribution pump and drier.
4. Use utility pump to drain out last of the water in the tank using hose to pump into the drainage ditch.
5. Enter tank via ladder. Inspect and clean out any debris in bottom of tank. Make sure someone is standing watch outside tank during this procedure!
6. Open all suction and discharge drain valves and allow to drain into buckets. Remove inline strainer cartridge, clean and replace.
7. Close pump suction side isolation valve. Open main suction and tank shut-off valves. With 40-100 psi air from large blue 400 gal aerator tank, blow down suction line for 5 min. through the end of suction drain line. The small portable compressor can supply the blue aerator tank if the aerator system is off.
8. Close all discharge drain line valves but make sure discharge lines to the lake are open. Apply 40-psi air from the large blue aerator system tank through the drain line at the discharge end of the pump for at least 20 minutes. Note: Greater than 40-psi air could damage discharge pressure gages.

9. Open all system valves
10. Unplug and disconnect the small compressor. Leave auto tank and drier drains on for a couple of days longer to insure moisture is drained out of the air supply system.
11. Unplug the surge protector disconnecting power to the MiniRanger.
12. Clear any stored items away from baseboard heaters and turn on heaters (low setting is usually sufficient).

D. Routine Maintenance:

1. Check and/or clean suction filter monthly (clean by rinsing strainer with water).
2. Check hoses for signs of wear or abrasion monthly.
3. Dispose of any alum discharged into buckets on a daily basis. If clean, return to alum tank. If contaminated with debris, etc. empty into garbage can in Compressor Building. This will minimize any spread of alum and reduce corrosive atmosphere in the building.
4. Make sure lines are drained and shut off valves closed prior the removing any system components or performing any maintenance.
5. Maintain tools, spare parts and safety equipment (ladder, hose, shovel, absorbents, utility pump, misc. hand tools, filter gaskets, fittings, tubing, elec. tape, elec. connectors, Teflon tape, etc.) in Compressor Building. An Alum System Parts List is provided as Attachment K.

E. Troubleshooting:

1. Low pump performance with increase in Suction vacuum: This is most likely due to a clogged suction filter line or a partially closed tank shut off valve. Low performance is characterized by lower pump discharge pressure and flow, air in lines, struggling pumps and difficulty priming.
2. Low pump performance with increase in discharge pressure:
   a. This could indicate a buildup of alum crystals or other partial blockage in discharge line. Flush with water from barrels for at least 30 min. Check alum supply to see if crystallization or contamination is a problem. Notify supplier and have next delivery be of lower concentration to help remove buildup. Also have diver check alum lines in lake for kinks or other obvious problems.
   b. Pump capacity is reduced as fluid viscosity increases and discharge pressure increases. May need to increase air supply pressure to the pump to maintain performance.
3. Pump will not cycle:
   a. Pumps will stop when line is blocked (when discharge pressure reaches air supply pressure). This can indicate a blocked discharge line. Check to make sure discharge line valves are open. Test by switching pump to another open discharge line. Can also try blowing down discharge line with 100-psi air to try and remove blockage. Also try procedures in #2 above.
   b. If cold weather, pump may be icing up. Check to make sure dryer is on and operating properly to remove moisture (see aerator operating instructions and manual). Ice should thaw if allowed to sit for a while or pump air end can be disassembled to remove ice.
   c. Check to see if there is adequate air supply to the pump. Check to see if solenoid on air supply line controlled by MiniRanger is open. Ensure there is power

to MiniRanger and check for proper on/off settings (these are noted in the MiniRanger manual in the Compressor Building). Note: If tank level reaches about 6 inches (or whatever the shut off setting is) the solenoid valve will close and the pump will shut off.

d. Make sure system is plugged in. Test and reset GFI outlet. Check to see if timer is running properly, and is not set to "off" or near "off". Also check outlet circuit breaker to see if it has been tripped.

e. Excessive air leakage in the pump can prevent cycling. This condition will be evident. Air leakage into the discharge line indicates a ruptured diaphragm. Air leakage from the exhaust port indicates leakage in the air distribution valve. See pump manual on file in the Compressor Building.

6. Pump is cycling but there is no flow:

a. Make sure suction valves are open and line is not plugged. Make sure pumps properly primed (see Startup procedures). Check suction filters for clogging. This is indicated by high suction vacuum on suction gage.

b. Suction side of pump may be pulling air. Check to be sure sufficient alum is in the tank. Check suction line for air leaks and check pump to make sure flange, manifold and valve bolts are tight and not leaking.

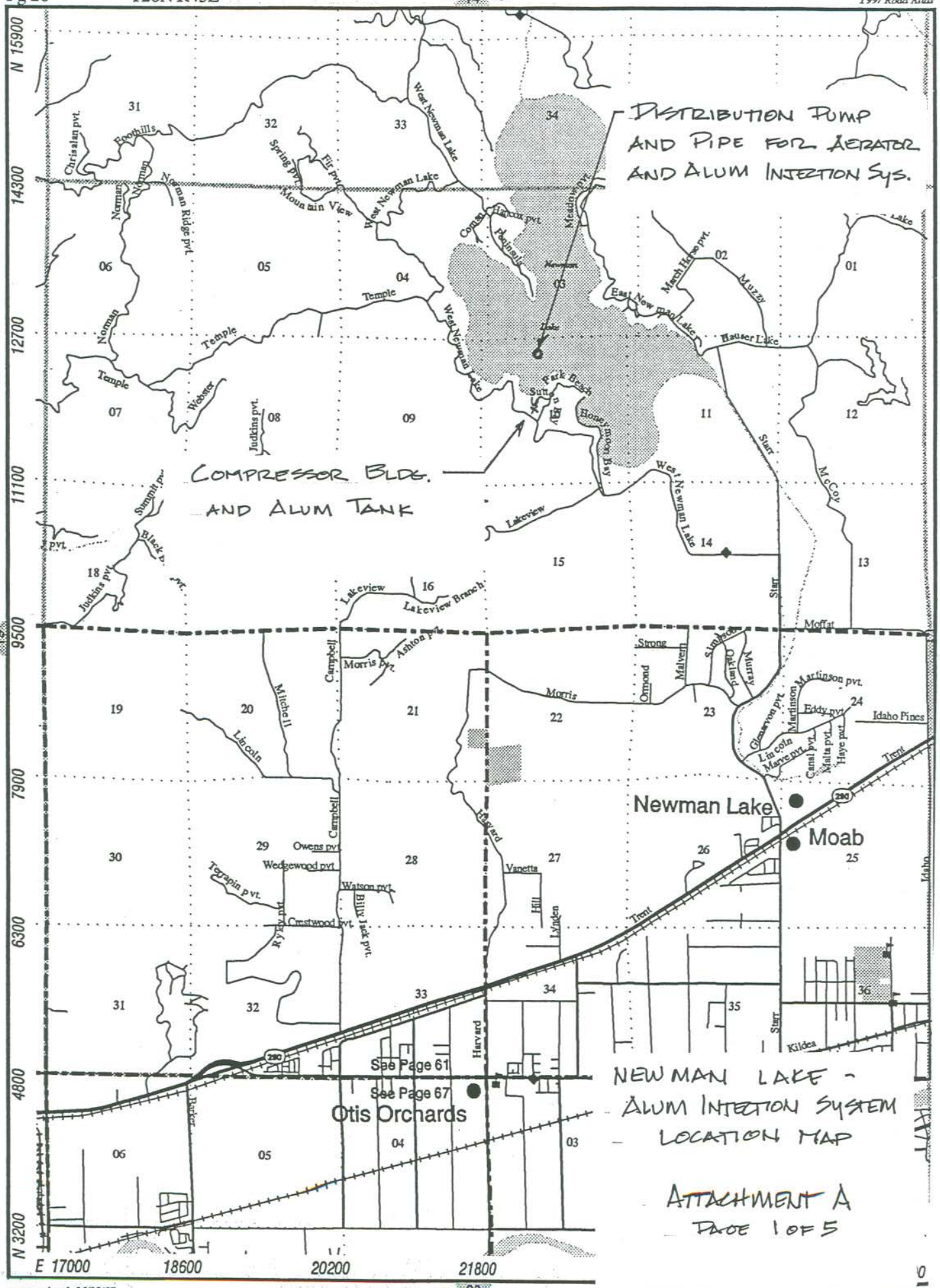
c. The check valves may not be seating properly. To test, remove the suction line and cover the suction port with your hand. If pump does not pull good suction, the check valves should be inspected for proper seating.

Newman Lake Alum Injection System

Operating Plan

List of Attachments

Attachment	Title
A	Site Plans
B	Alum Piping Schematic
C	Wiring Schematic
D	Photos
E	Material Safety Data Sheet (MSDS)
F	Sample Calculations
G	Discharge Monitoring Report Forms
H	Readings Form
I	Readings Spreadsheet
J	Delivery Spreadsheet
K	Parts List
L	Viscosity Graph



© Spokane County Public Works Division of Engineering and Road

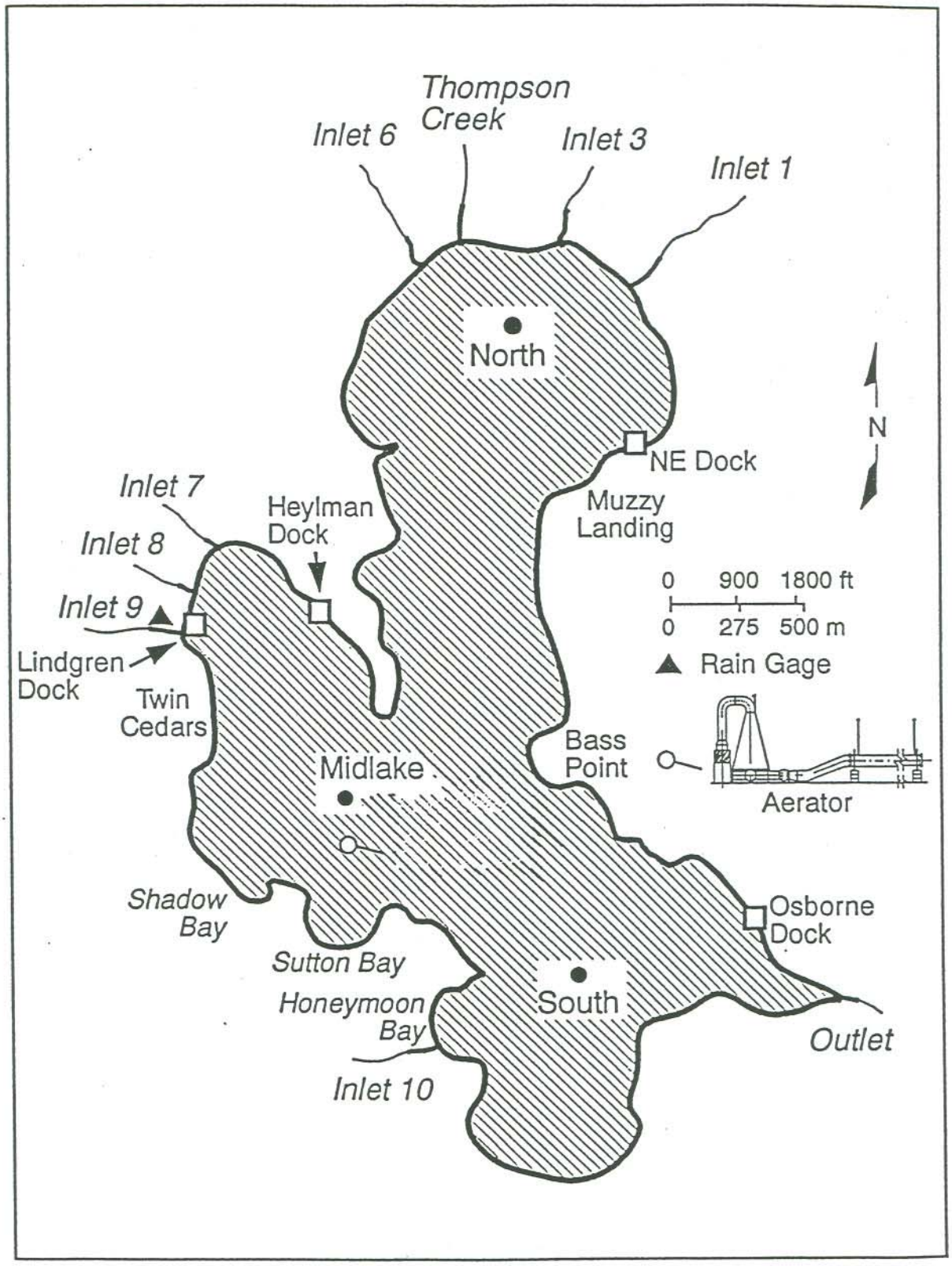
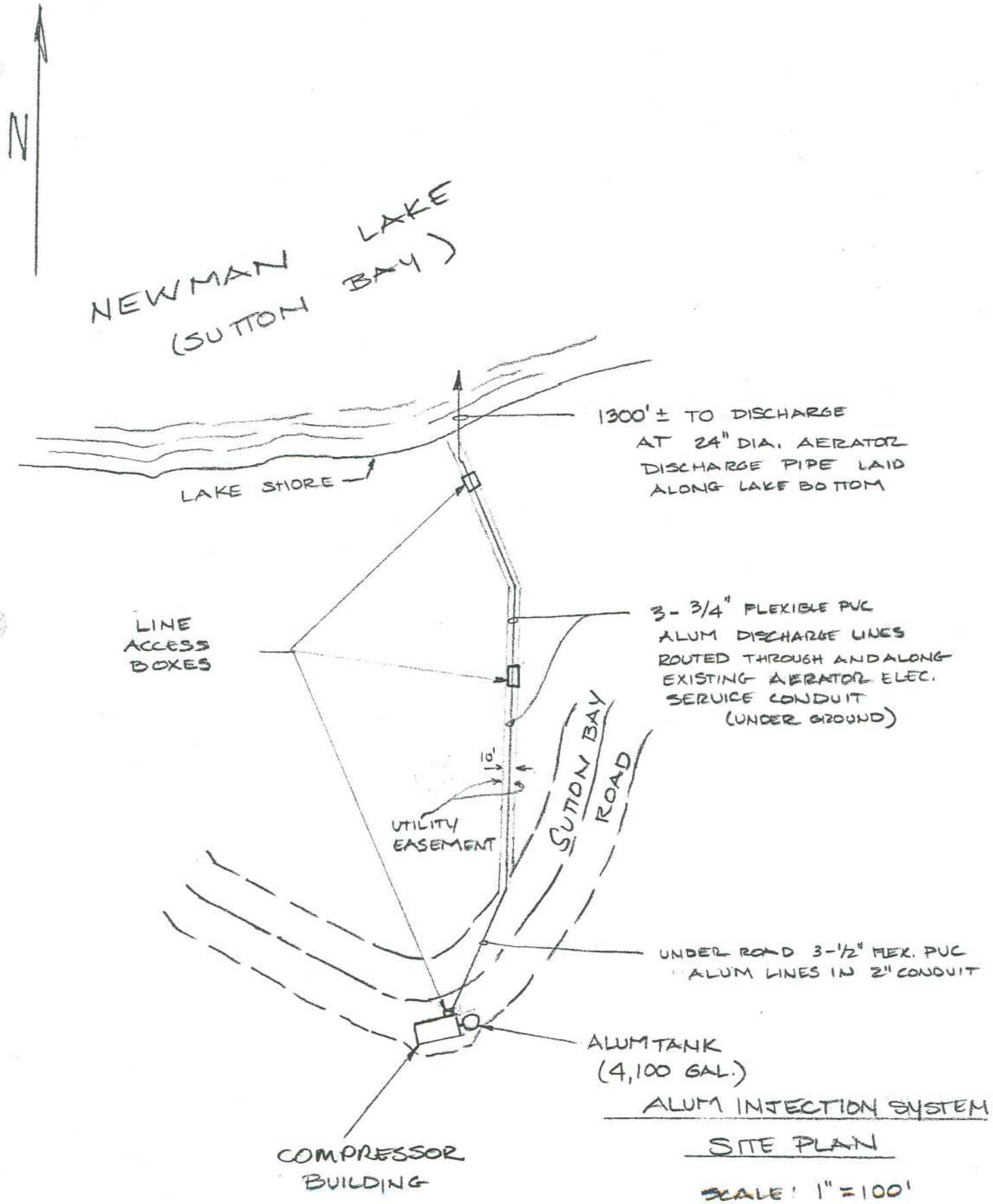


Figure 2. In lake and inlet sampling stations at Newman Lake, Washington.

ATTACHMENT A
PAGE 2 OF 5

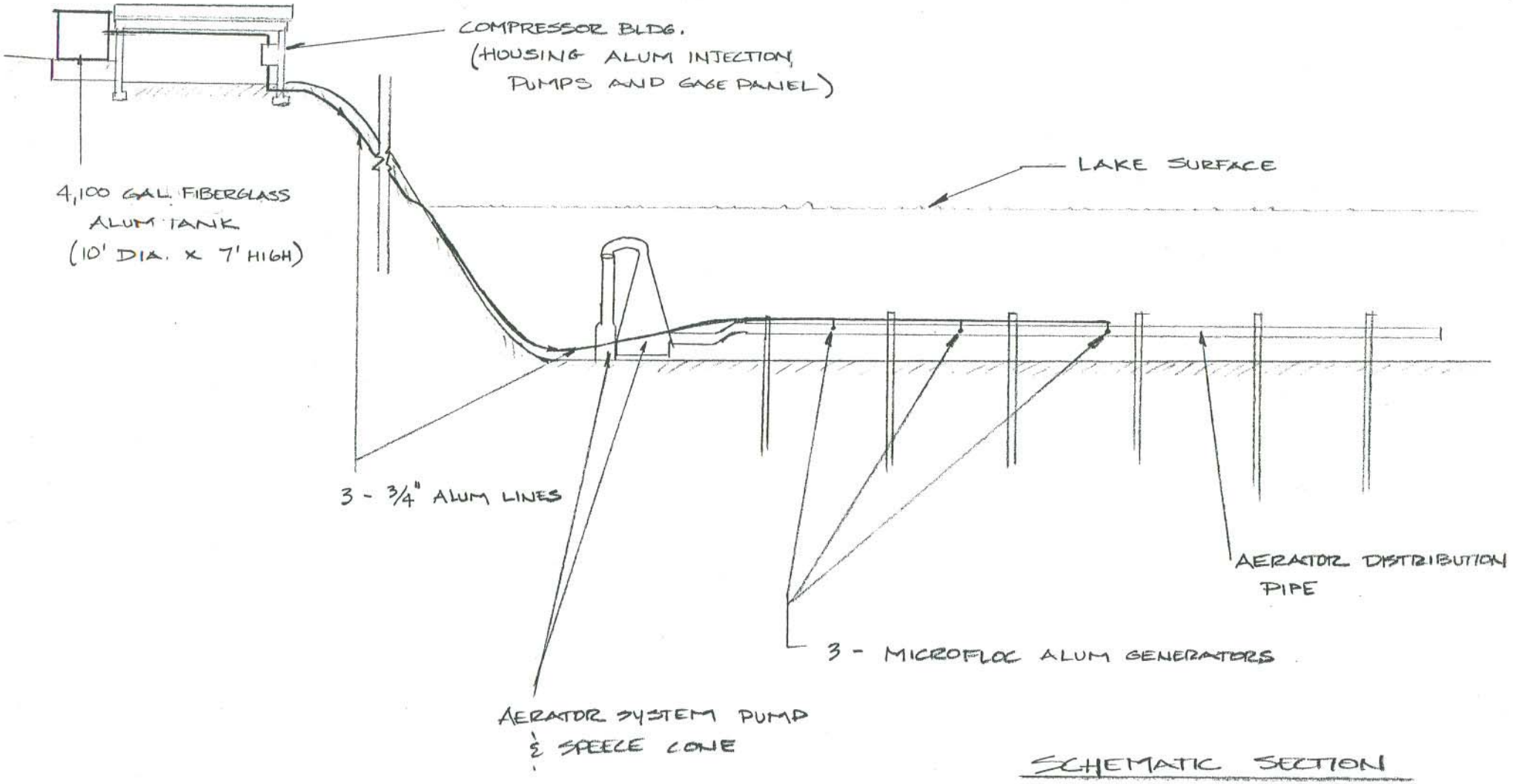


ALUM INJECTION SYSTEM

SITE PLAN

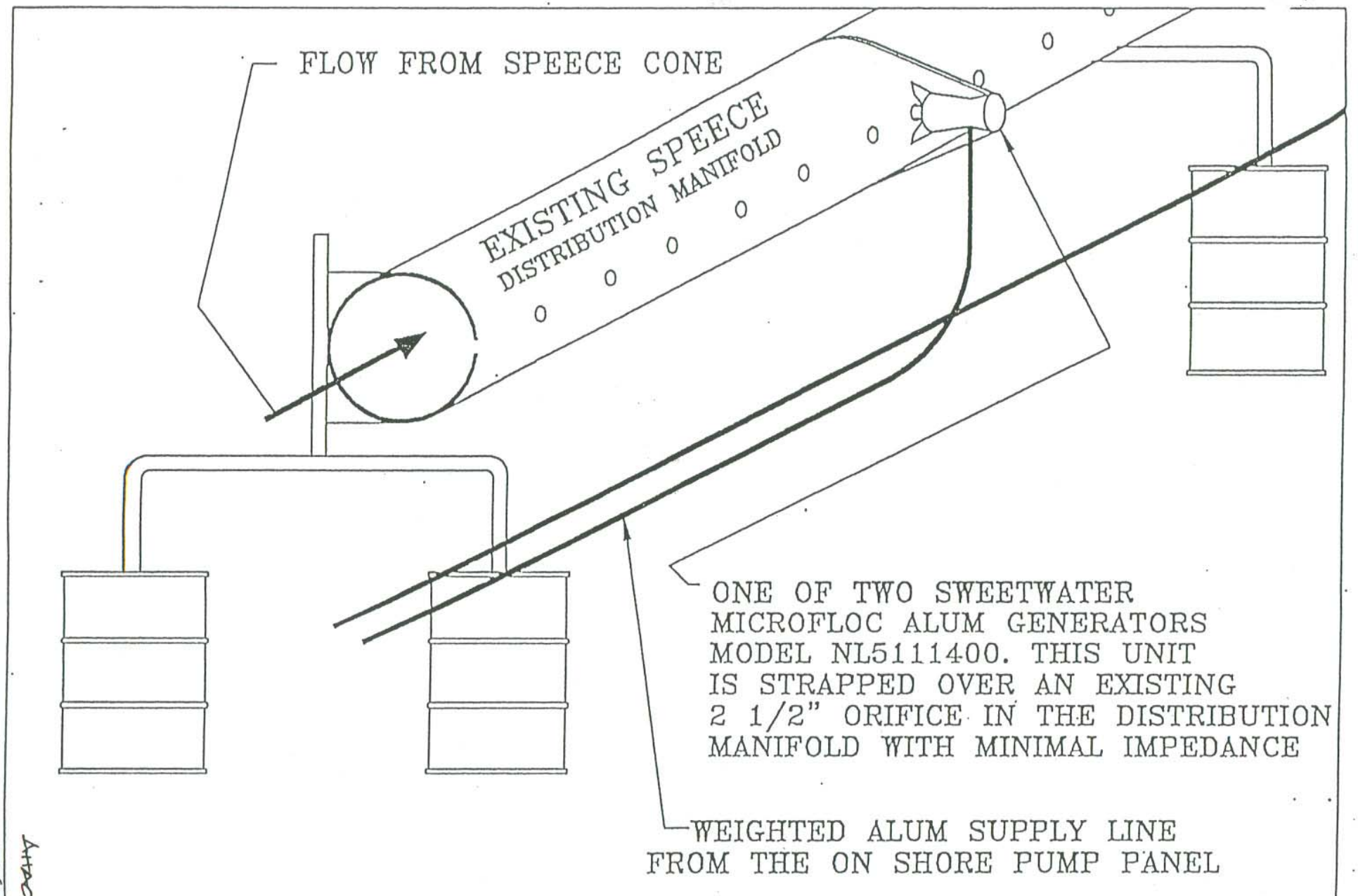
SCALE: 1" = 100'

ATTACHMENT A
PAGE 3 OF 5



SCHEMATIC SECTION
ALUM INJECTION SYSTEM

ATTACHMENT A
PAGE 4 OF 5

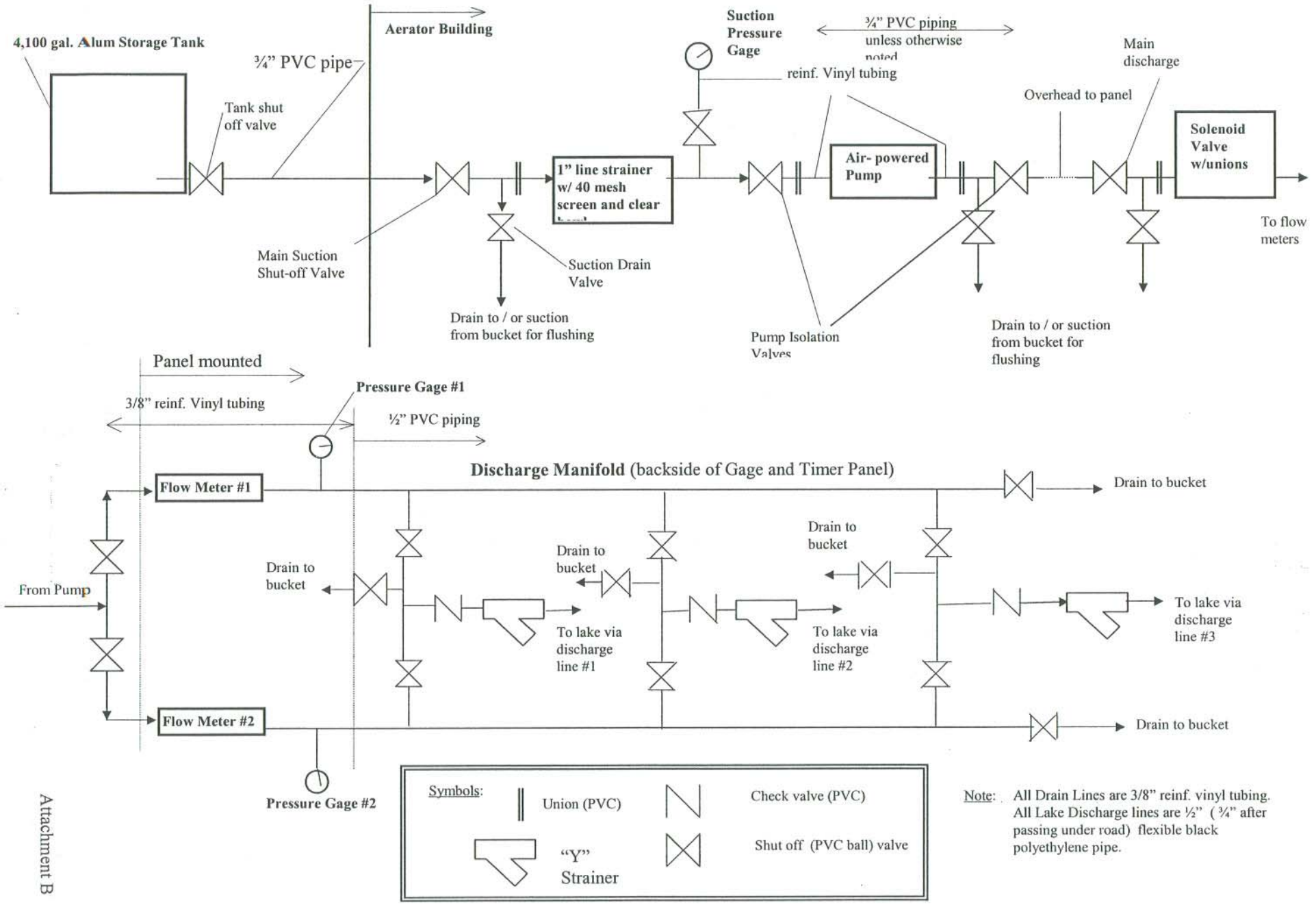


SWEETWATER TECHNOLOGY, DIV.	NEWMAN LAKE, SPOKANE, WA.
TeeMark Corp AITKIN MINNESOTA 56431 218-927-2200	MOUNTING OF SWEETWATER M/F GENERATOR ON DIST MANIFOLD
	DRAWN TEE 11/13/9 SCALE N/A PLOT SCALE
	CAD DWG NO SK5111301

ATTACHMENT A
PAGE 5 OF 5

ALUM INJECTION SYSTEM – ALUM PIPING SCHEMATIC

February 25, 2004

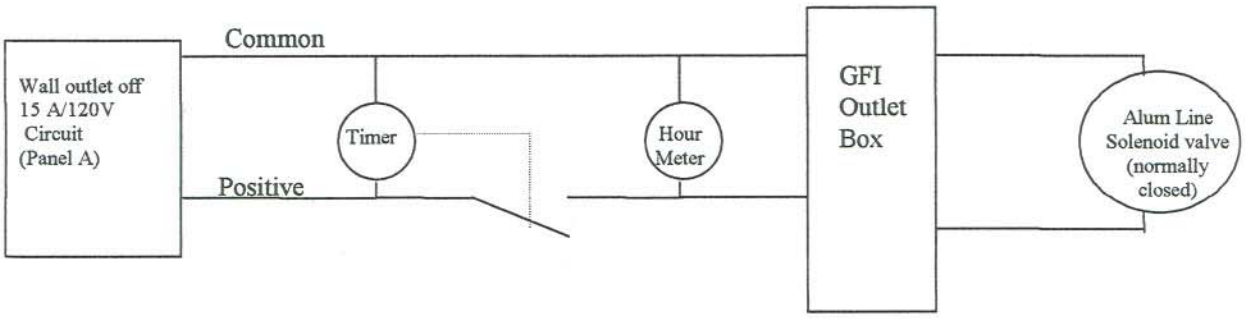


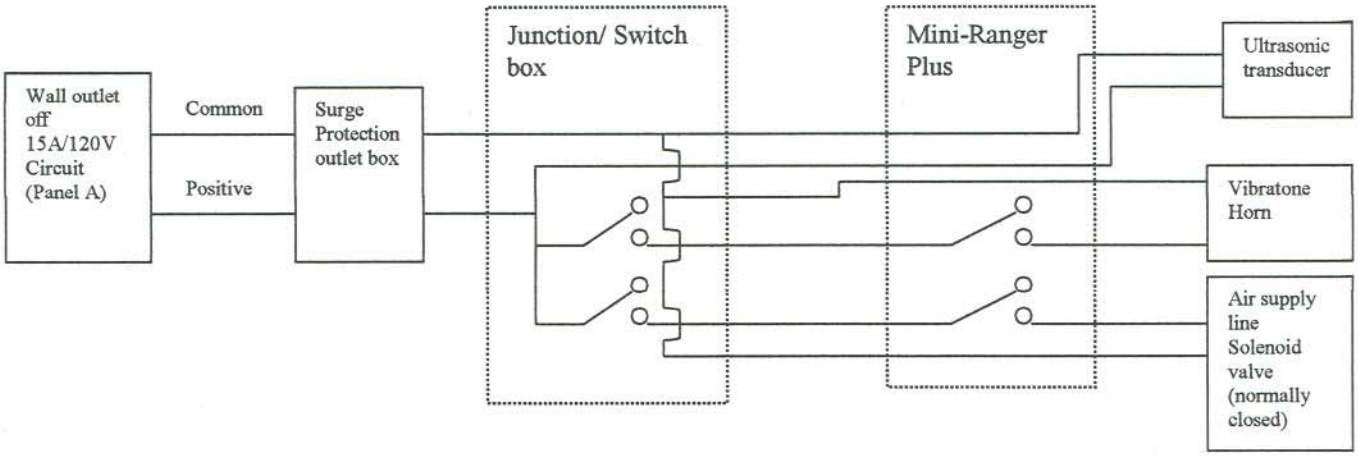
Note: All Drain Lines are 3/8" reinf. vinyl tubing. All Lake Discharge lines are ½" (¾" after passing under road) flexible black polyethylene pipe.

Attachment B

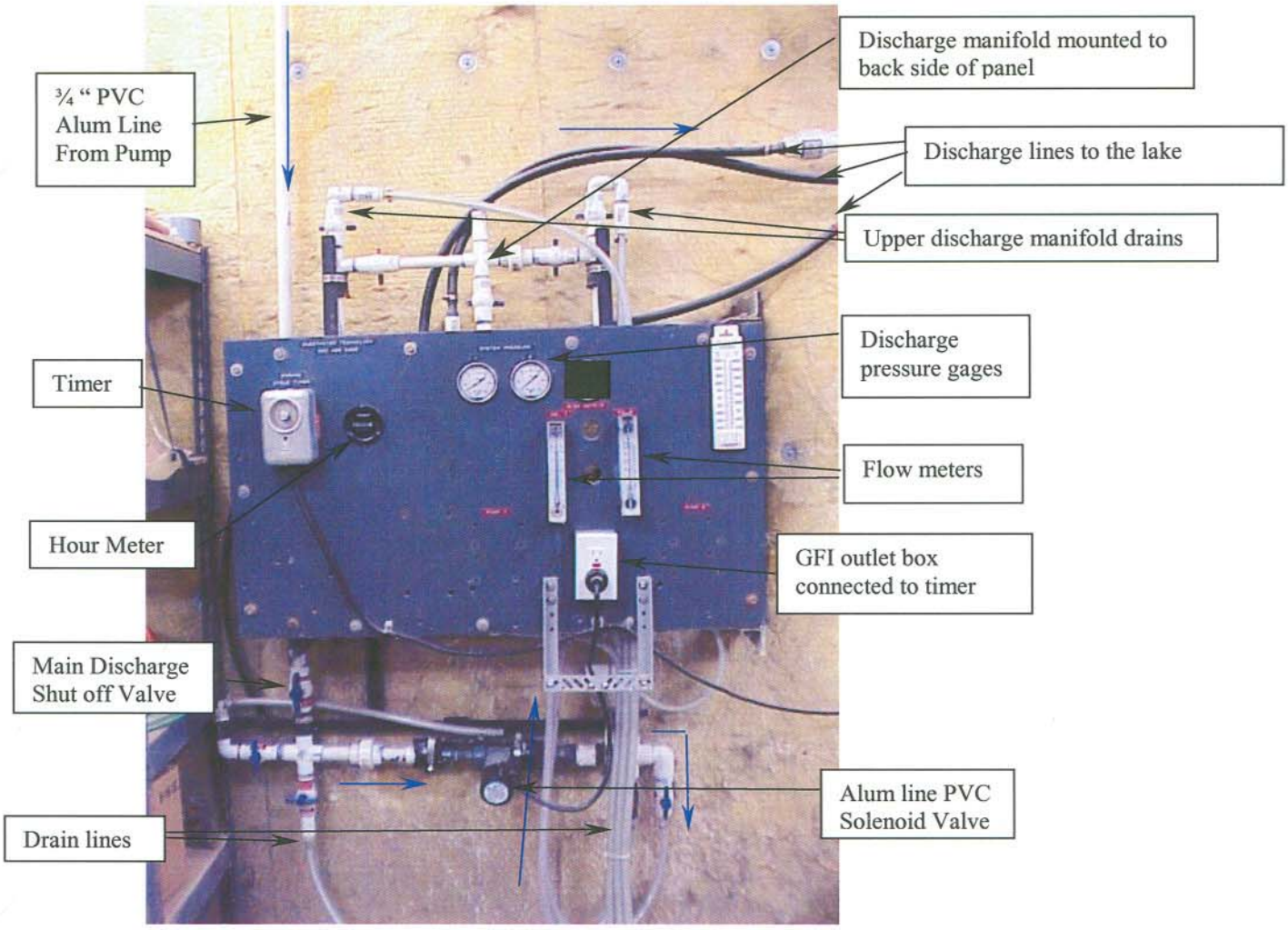
Newman Lake Alum Injection System

Wiring Schematic:

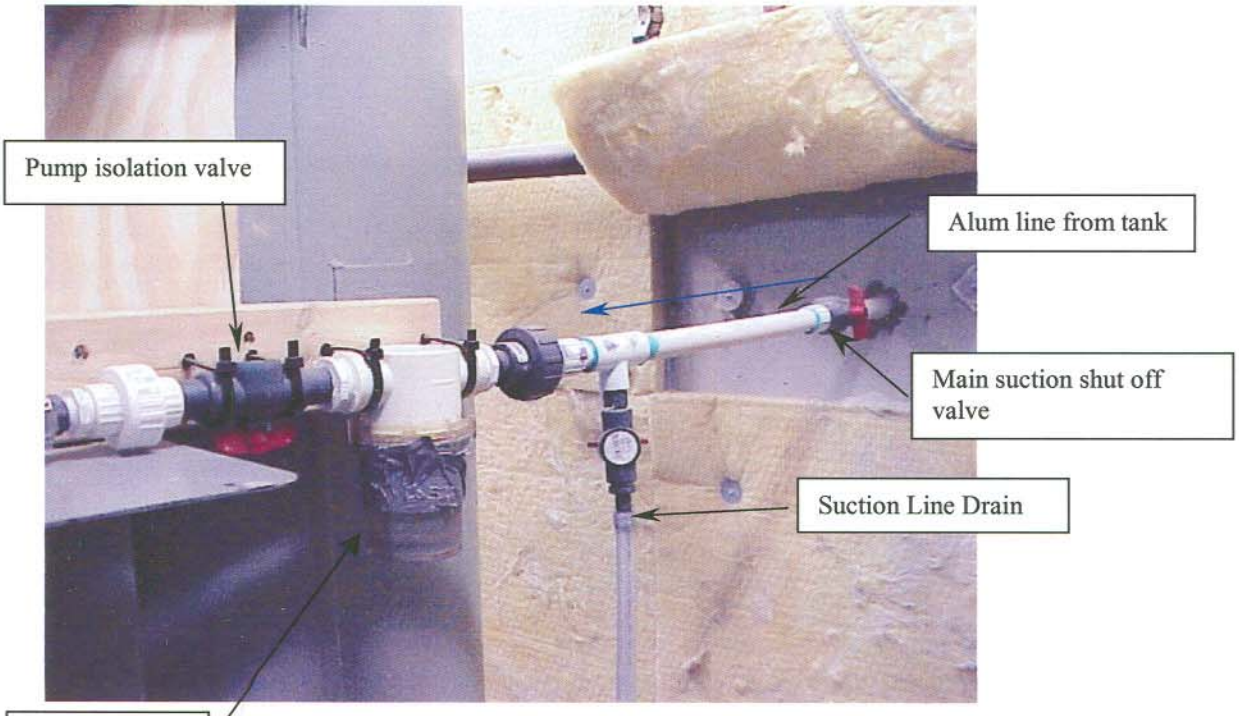




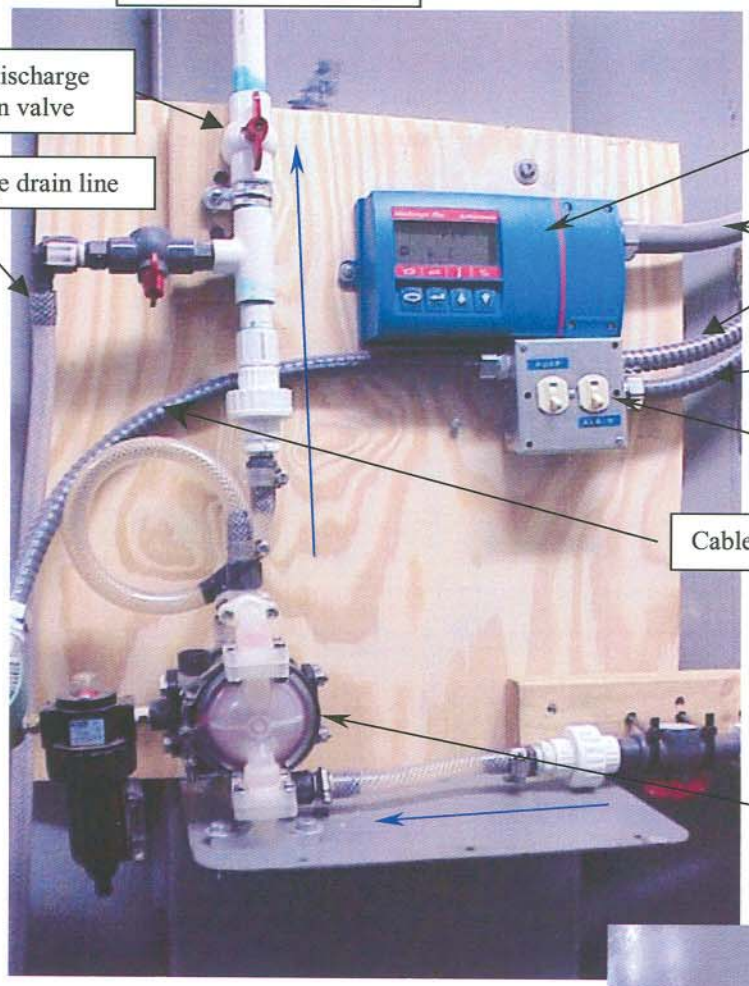
Attachment C



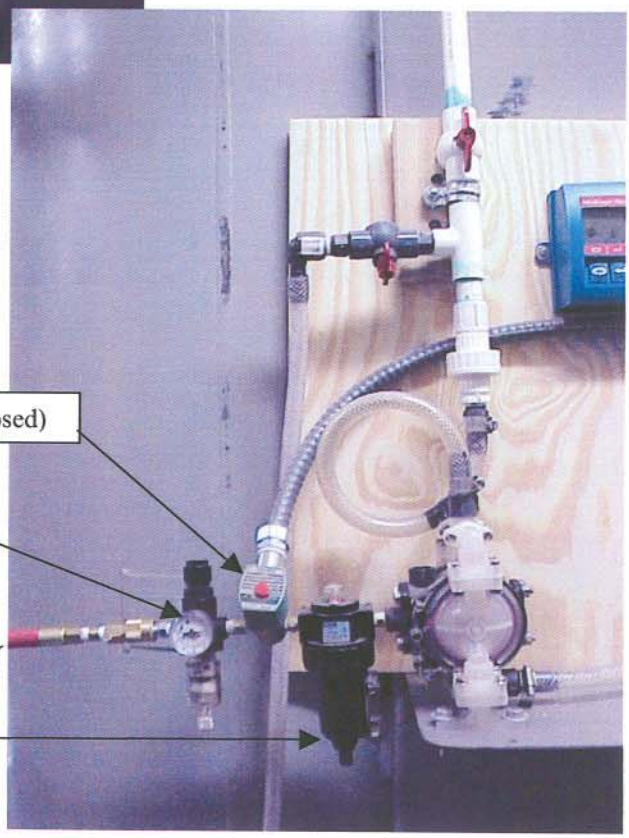
Alum System Gage And Timer Panel
(Mounted on North wall just west of entry door)



Alum Piping at Building Entrance (East Wall)



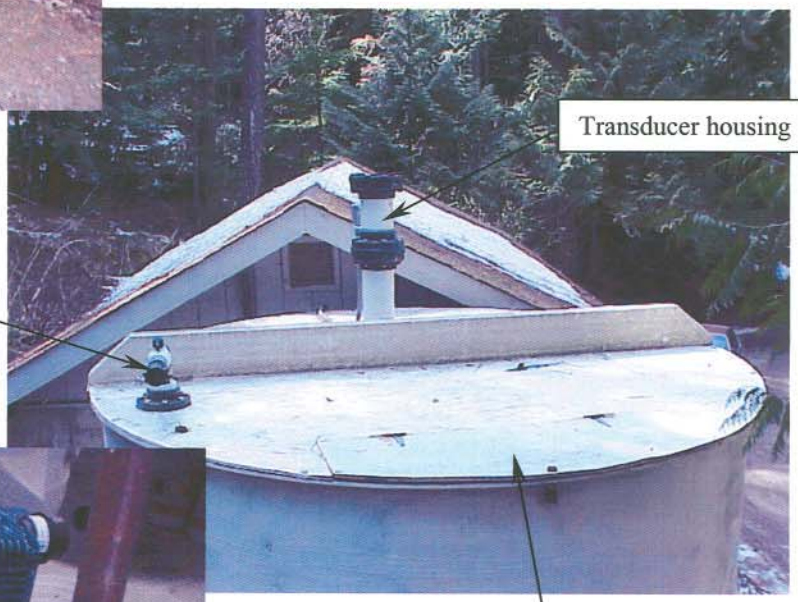
Pump Panel
(Mounted on rear of East AirSep)

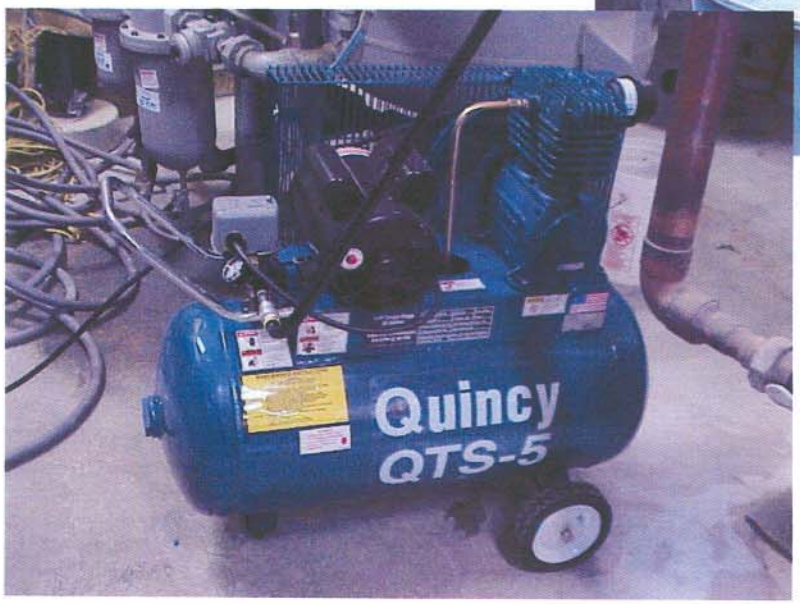


Pump Controls

View of Alum Tank Adjacent to Compressor Building

View of Top of Alum Tank





Portable Compressor

KEMIRON

MATERIAL SAFETY DATA SHEET

Aluminum Sulfate Solution

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CORPORATE OFFICE:
KEMIRON, INC.
316 Bartow Municipal Airport
Bartow, FL 33830
U.S. (800) 533-5990

SPOKANE OFFICE:
KEMIRON NORTHWEST, INC.
2315 N Sullivan Rd
Spokane, WA 99216
U.S. (509) 922-2244

Product Name: Aluminum Sulfate Solution, Alum
CAS#: 16828-12-9
MSDS Code: ALUM
Product Use: Water treatment chemical

Major Update: 05/05/99
Minor Revision: 02/16/01

Emergency Contacts (24 hr.)

FOR EMERGENCIES INVOLVING CHEMICAL SPILL OR RELEASE, CALL
1-800-527-7457
FOR CHEMTREC CALL **1-800-424-9300**

SECTION 2 – COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient(s)	% (w/w)	ACGIH TWA	CAS NO.
Aluminate Sulfate Hydrate	43 - 49	2 mg/m^3 (TWA) (as Aluminum salts)	16828-12-9
Sulfuric Acid	0 - 3	2 mg/m^3 (STEL)	7664-93-9
Water	48 - 57	Not Applicable	7732-18-5

SECTION 3 – HAZARD IDENTIFICATION

****

Emergency Overview: Corrosive! May cause burns to skin, eyes, respiratory tract and mucous membranes. Harmful or fatal if swallowed. Not flammable, but reacts with most metals to form explosive/flammable hydrogen gas. Read the entire MSDS for a more thorough evaluation of the hazards.

****

Potential Health Effects:

Inhalation : Causes respiratory irritation and at high concentrations may cause severe injury and burns to the mucous membranes and lungs.

Skin Contact: Corrosive to skin and can cause burns. Prolonged or repeated exposure to dilute solutions may cause irritation, redness, pain and drying and cracking of the skin.

Eye Contact: Can cause severe burns and corneal damage, which may result in permanent blindness.

Ingestion: Causes burns of the mouth, throat, esophagus and stomach.

Chronic Effects: No chronic effects expected.

Existing Medical Conditions Possibly Aggravated By Exposure : Skin irritation may be aggravated in individuals with existing skin lesions. Breathing of vapors or mists may aggravate acute or chronic asthma and chronic pulmonary disease such as emphysema and bronchitis.

Carcinogenicity: Aluminum sulfate is not classified as carcinogenic by ACGIH (American Conference of Governmental Industrial Hygienists) or IARC (International Agency for Research on Cancer), not regulated as carcinogens by OSHA (Occupational Safety and Health Administration), and not listed as carcinogens by NTP (National Toxicology Program).

SECTION 4 – FIRST AID MEASURES

General: If you feel unwell seek medical advice (show the label where possible).

Inhalation: Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Do not use mouth-to-mouth method if victim ingested or inhaled the substance: induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Give Cardiopulmonary Resuscitation (CPR) only if there is no pulse AND no breathing. Obtain medical attention IMMEDIATELY.

Skin Contact: Immediately flush skin with running water for at least 15 - 20 minutes. Under running water remove contaminated clothing, jewelry, and shoes. If irritation persists, repeat flushing. For burns, obtain medical attention. Discard heavily contaminated clothing and shoes in a manner, which limits further exposure. Otherwise, wash clothing separately before reuse.

Eye Contact: Immediately flush eyes with running water for a **minimum** of 15 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY. Do not transport victim until the recommended flushing period is completed unless flushing can be continued during transport.

Ingestion : DO NOT INDUCE VOMITING. If victim is alert and not convulsing, rinse mouth and give as much water as possible to dilute material. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. IMMEDIATELY transport victim to an emergency facility.

SECTION 5 – FIRE FIGHTING MEASURES

Flash Point	Not applicable. Not combustible
Flammable Limits (Lower)	Not applicable
Flammable Limits (Upper)	Not applicable
Auto Ignition Temperature	Not applicable
Combustion and Thermal Decomposition Products	Forms aluminum oxide, sulfur dioxide and/or sulfur trioxide at temperatures variably reported as above 650 deg C (1200 deg F) or 760 deg C (1400 deg F)
Rate of Burning	Not applicable
Explosive Power	Not applicable
Sensitivity to Mechanical Impact	Not applicable

Fire and Explosion Hazards: Not flammable. Sulfuric acid may react with many metals to liberate hydrogen gas, which can form explosive mixtures with air. Hydrogen, a highly flammable gas, can accumulate to explosive concentrations inside drums, or any types of steel containers or tanks upon storage. Oxides of sulfur and aluminum may be produced in fire.

Extinguishing Media : Small fires: Dry chemical, carbon dioxide or water spray. Large fires: Dry chemical, carbon dioxide, alcohol-resistant foam or water spray.

Special Information: Firefighters should wear acid resistant protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode. Move containers from fire area if you can do it without risk. Dike fire control water for later disposal; do not scatter the material. Fire involving tanks or car/trailer loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from the ends of tanks.

Evacuation: If tank, rail car or tank truck involved in a fire, ISOLATE and consider evacuation of one-half (1/2) mile radius.

NOTE: Also see "Section 10 - Stability and Reactivity"

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Spills, Leaks, or Releases:

- Restrict access to area until completion of clean up. Ensure trained personnel conduct clean up.
- Remove all ignition sources (no smoking, flares, sparks or flames). All equipment should be grounded. Ventilate area.
- Wear adequate personal protective equipment. Do not touch spilled material.
- Stop leak if possible without personal risk.
- Small spills: Cover with DRY earth, sand or other non-combustible material. Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.
- Large spills: Prevent entry into sewers and confined areas. Dike with inert material (sand, earth, etc.). Collect into plastic containers for disposal. Consider insitu neutralization and disposal. Ensure adequate decontamination of tools and equipment following clean up. Comply with Federal, Provincial/State and local regulations on reporting releases.

Deactivating Chemicals: Lime, limestone, sodium carbonate (soda ash), sodium bicarbonate, dilute sodium hydroxide, dilute aqua ammonia

Waste Disposal Methods: Dispose of waste material at an approved waste treatment/disposal facility, in accordance with applicable regulations. Do not dispose of waste with normal garbage or to sewer systems.

Note - Clean-up material may be a RCRA Hazardous Waste on disposal.
- Spills are subject to CERCLA reporting requirements: RQ = 5000 lbs.

SECTION 7 – HANDLING AND STORAGE

Precautions: Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled. Wear appropriate Personal Protection Equipment. People working with this chemical should be properly trained regarding its hazards and its safe use.

Handling Procedures and Equipment: Keep containers closed when not in use. Empty containers may contain hazardous residues. Use corrosion-resistant transfer equipment when dispensing.

Storage Requirements: Liquid alum may be received and stored in corrosion-resistant tanks. Store in a cool, dry, well-ventilated area, out of direct sunlight. Store away from incompatible materials such as strong bases. Keep containers tightly closed when not in use and when empty. Protect from damage.

Outdoor storage tanks should be suitably diked or otherwise provided with an adequate means of secondary containment. Appropriate secondary containment measures should be taken to prevent spills or leaks from indoor storage tanks and tank-car or tank-truck unloading stations from entering sewers or other channels that discharge directly to a water body or a municipal sewage system.

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

PREVENTIVE MEASURES

Recommendations listed in this section indicate the type of equipment, which will provide protection against over exposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

Engineering Controls: Local exhaust ventilation should be applied wherever there is an incidence of point source emissions or dispersion of regulated contaminants in the work area. Ventilation control of the contaminant as close to its point of generation is both the most economical and safest method to minimize personnel exposure to airborne contaminants. The most effective measures are the total enclosure of processes and the mechanization of handling procedures to prevent all personal contact. Smoking should be prohibited in areas in which aluminum sulfate solution is stored or handled.

PERSONAL PROTECTIVE EQUIPMENT

Eye Protection: Wear splash resistant chemical goggles and full-face shield. Maintain eye wash fountain and quick-drench facilities in work area.

Skin Protection: Wear impervious protective clothing, such as PVC, vinyl or rubber including boots, gloves, lab coat, apron, rain jacket, pants or coveralls, as appropriate, to prevent skin contact. Guidelines for clothing for sulfuric acid may be applicable.
Guidelines for sulfuric acid, less than 30%:
RECOMMENDED (resistance to breakthrough longer than 8 hours): Butyl rubber, natural rubber, neoprene, polyethylene, polyvinyl chloride, Teflon (TM), Viton (TM), Barricade (TM), Responder (TM), CPF, Saranex (TM), 4H (TM), 3 (TM), Trellchem HPS (TM), Tychem 10000 (TM).
NOT RECOMMENDED for use (resistance to breakthrough less than 1 hour): Polyvinyl alcohol.
Recommendations are NOT valid for very thin Natural rubber, Neoprene, Nitrile and PVC gloves (0.3 mm or less).
Recommendations are valid for permeation rates reaching 0.1 ug/cm2/min or 1 mg/m2/min and over. Resistance of specific materials can vary from product to product. Breakthrough times are obtained under conditions of continuous contact, generally at room temperature. Evaluate resistance under conditions of use and maintain clothing carefully.

Respiratory Protection: A NIOSH/MSHA approved air-purifying respirator equipped with acid mist cartridges for concentrations up to 10 mg/m^3. A supplied air respirator if concentrations are higher or unknown.

EXPOSURE GUIDELINES

PRODUCT:

Aluminum Sulfate:

ACGIH TLV	2 mg/m^3 (TWA as Aluminum, soluble salts)

Sulfuric Acid :

ACGIH TLV	1 mg/m^3 (TWA)
ACGIH STEL	3 mg/m^3
OSHA PEL	1 mg/m^3 (TWA)

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Alternate Name(s)	Alum, paper maker's alum, acidic alum, dialuminum trisulfate, aluminum sulfate
Chemical Name	Aluminum Sulfate Tetradecahydrate
Chemical Family	Aluminum salt
Molecular Formula	$Al_2(SO_4)_3 \bullet 14\,H2O$
Molecular Weight	594.4
Appearance	Clear liquid
Odor	Odorless
pH	1.8 – 2.4
Vapor Pressure (mm Hg at 21 °C(69.8°F)	No data
Vapor Density (Air = 1)	No data
Boiling Point	103 °C (218 °F)
Freezing Point	-16°C (3.2°F)
Solubility (Water)	Completely

Specific Gravity	1.3 @ 16 °C (60 °F)
Evaporation Rate	Not available
% Volatile by Volume	Not available
% Volatile Organic Compounds	Not available

SECTION 10 – STABILITY AND REACTIVITY

Chemical Stability: Normally stable, but reacts violently with basic and oxidizing materials with evolution of heat.

Hazardous Decomposition Products: Thermal decomposition: sulfur dioxide, sulfur trioxide, and sulfuric acid vapors.

Conditions to Avoid: Avoid heat, flames, sparks and other sources of ignition.
Incompatibility with other Substances: Strong oxidizing agents (e.g. chlorine, perchlorates, and peroxides) - reaction may be violent. May give off sulfur dioxide.
Strong Bases (e.g. sodium hydroxide) - may react violently.

Corrosivity to Metals: Can be very corrosive to most metals including cast iron, steel, and aluminum. The corrosivity of sulfuric acid and aluminum sulfate solutions depends on factors such as concentration, temperature and acid impurities.

Hazardous Polymerization: Will not occur.

SECTION 11 – TOXICOLOGICAL INFORMATION

TOXICOLOGICAL DATA:

Toxicological Data:

Aluminum Sulfate: LD50 (oral, rat): greater than 9000 mg/kg

Sulfuric Acid: LD_{50} (oral, rat) = 2140 mg/kg
LC_{50} (inhalation, rat) = 510 mg/m^3 for 2 hrs
Skin effects (rabbit): Severe irritation
Eye effects (rabbit): Severe irritation

Mutagenicity: Aluminum Sulfate: A solution of aluminum sulfate in water produced positive results obtained in cultured human cells (leukocytes) (sister chromatid exchanges, micronuclei and chromosomal aberrations).

Reproductive Effects: No data available

Teratogenicity and Fetotoxicity: No data available

Synergistic Materials: None known

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicological Information: Aluminum sulfate: LC50 (12-96 hr) goldfish: 100 mg/L

Persistence and Degradation: No data available.

SECTION 13 – DISPOSAL CONSIDERATIONS

Review federal, state and local government requirements prior to disposal.

Do not dispose of waste with normal garbage, or to sewer systems.

Whatever cannot be saved for recovery or recycling, including containers should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options.

RCRA: Test waste material for corrosivity, D002, prior to disposal.

SECTION 14 – TRANSPORT INFORMATION

	TDG	DOT
Shipping Name	Corrosive liquid, acidic, inorganic, n.o.s.	Corrosive liquid, acidic, inorganic, n.o.s.
Hazard Class/Division	8: Corrosive	8: Corrosive
Identification No.	UN3264	UN3264
Packing Group:	III	III

IATA/ICAO Class: 8

Transportation Emergency Telephone Number: 1-888-306-7070

SECTION 15 – REGULATORY INFORMATION

OSHA Classification: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200)

SARA Regulations sections 313 and 40 CFR 372: N

SARA Hazard Categories, SARA SECTIONS 311/312 (40CFR370.21):
ACUTE: Y
CHRONIC: N
FIRE: N
REACTIVE: N
SUDDEN RELEASE: N
OSHA PROCESS SAFETY (29CFR1910.119): N

CERCLA SECTION 103 (40CFR302.4): Y
Reportable Quantity (RQ) under CERCLA: 5000 lb (2270 kg)

TSCA Inventory Status: N

Other Regulations/Legislation which apply to this product:

Right-to-Know/Disclosure Lists: Massachusetts, New Jersey, Pennsylvania, California – hazardous substances

California Proposition 65: N

This product does not contain nor is it manufactured with ozone depleting substances.

Canadian Classification

This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS (Material Safety Data Sheet) contains all the information required by the CPR.

Controlled Products Regulations (WHMIS) Classification: Class E - Corrosive

CEPA / Canadian Domestic Substances List (DSL): N

WHMIS Ingredient Disclosure List: Meets criteria for disclosure at 1% or greater.

SECTION 16 – OTHER INFORMATION

The information contained herein is offered only as a guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and KEMIRON will not be liable for any damages, losses, injuries or consequential damages that may result from the use of or reliance on any information contained herein. This Material Safety Data Sheet is valid for three years.

Revision Indicators:

Δ In the left margin indicates a revision or addition of information since the previous issue.

National Fire Protection Association (NFPA) Rating
Hazardous Materials Identification System (HMIS) Rating

	NFPA	HMIS
HEALTH	3	3
FIRE	0	0
REACTIVITY	0	0

4= Extreme/Severe
3 = High/Serious
2 = Moderate
1 = Slight
0 = Minimum

REFERENCES:

1. American Water Works Association, ANSI/AWWA B403-88, AWWA Standard for Aluminum Sulfate-Liquid, Ground, or Lump, Colorado, Jan 1989
2. Chemlist, STN Database, Chemical Abstract Service, Jan 1999
3. "CHEMINFO", through "CCINFOdisc", Canadian Centre for Occupational Health and Safety, Hamilton, Ontario, Canada, (Dec, 1998).
4. RTECS-Registry of Toxic Effects of Chemical Substances, On-line search, Canadian Centre for Occupational Health and Safety RTECS database, Doris V. Sweet, Ed., National Institute for Occupational Safety and Health, U.S. Dept. of Health and Human Services, Cincinnati, Entry Update/Nov 1998.
5. "1998 Threshold Limit Values and Biological Exposure Indices", American Conference of Government Industrial Hygienists, 1998.
6. Merck, 11th Edition, 1989

Legend:

CAS # - Chemical Abstracts Service Registry Number
CERCLA- Comprehensive Environmental Response, Compensation, and Liability Act
CFR - Code of Federal Regulations
DOT - Department of Transportation
LC_{50} - The concentration of material in air expected to kill 50% of a group of test animals
LD_{50} - Lethal Dose expected to kill 50% of a group of test animals
SHA - Mine Safety and Health Administration
NIOSH - National Institute for Occupational Safety and Health
PEL - Permissible Exposure Limit
PVC - Polyvinyl chloride
RCRA - Resource Conservation and Recovery Act
SARA - Superfund Amendments and Reauthorization Act of the U.S. EPA
STEL - Short Term Exposure Limit
TC - Transport Canada
TDG - Transportation of Dangerous Goods Act/Regulations
TLV - Threshold Limit Value
TSCA - Toxic Substances Control Act
TWA - Time-Weighted Average

Newman Lake Alum Injection System

Sample Calculations

1. To calculate the percentage of Aluminum (Al) in "dry" Alum:

Alum = $Al_2(SO_4)_3 \bullet 14.3H_20$

	Atomic Weight	Atoms	Formula Weight	"Dry" Weight %
Al	26.98	2	53.96	**9.0**
S	32.06	3	96.18	**16.0**
O	15.994	12	191.93	**32.0**
H	1.0079	28.6	28.83	4.8
O	15.994	14.3	228.71	38.2
		Total	599.61	100

Aluminum (Al) = 9%, Sulfate (SO_4) = 48% of dry weight of Alum.

2. To convert from Gallons of Alum solution (wet) to Pounds of Alum (dry):

Gal. Alum Solution x Specific Gravity of the Solution x Density of Water (lb./ gal.)

x % concentration of Alum (lb. alum/lb. total) = lb. Alum (dry)

For example, to calculate the pounds of alum in a gallon of alum solution at 40.7% concentration,

1 gal. alum x 1.2650 x 8.3436 lb./gal. x 40 % = 4.22 lb. Alum

At 49%,

1 gal. alum x 1.3334 x 8.3436 lb./gal. x 49 % = 5.45 lb. Alum

Note: A gallon of Alum at 49% has 29% more alum by weight than a gallon at 40%.

Newman Lake Flood Control Zone District — Discharge Monitoring Report

Permit #WA 0045438 County: Spokane Month: Oct Year: 2003

	Alum Flow	Conc.	Spec. Grav.	Aluminum	Sulfate
Freq.	daily			daily	daily
Date	gpd			lbs	lbs
1	1083	49.36%	1.3322	534	2850
2	861	49.36%	1.3322	425	2265
3	0	49.36%	1.3322	0	0
4	802	48.32%	1.3237	385	2052
5	1313	48.32%	1.3237	630	3359
6	1344	48.32%	1.3237	645	3438
7	504	49.38%	1.3324	249	1327
8	1110	49.38%	1.3324	548	2922
9	1080	49.38%	1.3324	533	2844
10	684	49.38%	1.3324	338	1802
11	890	49.45%	1.3331	440	2348
12	864	49.45%	1.3331	427	2278
13	700	49.45%	1.3331	346	1847
14	994	49.45%	1.3331	491	2620
15	0	49.45%	1.3331	0	0
16	377	48.61%	1.3260	182	972
17	1176	48.61%	1.3260	568	3031
18	1097	48.61%	1.3260	530	2828
19	730	48.61%	1.3260	353	1881
20	154	48.61%	1.3260	75	398
21	128	48.61%	1.3260	62	330
22	127	48.61%	1.3260	61	327
23	0			0	0
24	0			0	0
25	0			0	0
26	0			0	0
27	0			0	0
28	0			0	0
29	0			0	0
30	0			0	0
31	0			0	0
Month Total	16,018			7,822	41,719
Month Max.	1,344			645	3,438
YTD Total	77,406			37,678	200,947
Permit Limits				Daily Max - 900 Yearly Max- 49,700	Daily Max - 4,800 Yearly Max- 265,000

COMMENTS:

System shut down on 10/20, added water to last 5 inches in tank and flushed out on 10/21-10/22

I CERTIFY UNDER PENALTY OF LAW, THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR WILLFUL VIOLATIONS.

Marianne S. Barrentine, PE — Newman Lake Engineer

NAME AND TITLE — (509) 477-7443

11/14/03

SIGNATURE — DATE

FORM DATED 09/09/2002

Attachment G

Newman Lake Flood Control Zone District

Permit #WA 0045438 County: Spokane

Newman Lake Sampling

Date	Parameter	Units	North Sampling			Mid-Lake Sampling			Southeast Sampling		
			1.0 mtrs	2.0 mtrs	1.0 mtrs off bottom	1.0 mtrs	4.0 mtrs	1.0 mtrs off bottom	1.0 mtrs	2.0 mtrs	1.0 mtrs off bottom
10/2/2003	Temperature	°C	16.9	16.7	16.5	16.8	16.7	16.7	17.0	16.8	16.7
	pH	s.u.	8.7	8.7	8.6	8.5	8.5	8.4	8.8	8.7	8.6
	Dissolved Oxygen	mg/l	8.2	7.7	7.2	7.5	7.3	7.6	8.1	7.8	7.6
	Conductivity	umho/cm	48	48	48	49	49	49	49	49	49
10/24/2003	Temperature	°C	12.9	12.8	12.7	12.8	12.8	12.8	13.0	12.8	12.4
	pH	s.u.	8.4	8.4	8.3	8.5	8.3	8.3	8.4	8.4	8.3
	Dissolved Oxygen	mg/l	7.0	6.8	6.6	6.8	6.5	6.3	6.8	6.7	6.6
	Conductivity	umho/cm	50	50	50	51	51	51	51	51	51
	Temperature	°C									
	pH	s.u.									
	Dissolved Oxygen	mg/l									
	Conductivity	umho/cm									

Date	Parameter	Units	North Sampling	Mid-Lake Sampling	Southeast Sampling
10/2/2003	Secchi Disk	m	2.00	2.00	2.00
10/24/2003	Secchi Disk	m	2.25	2.25	2.30
	Secchi Disk	m			

Please check one: _____ Bi-Weekly Sample x Monthly Sample _____ Quarterly Sample

Remarks: 10/24/03 is last sampling for the season

Newman Lake Alum Injection System - Readings for ____________, 2005

Day	Time	Tank Level	Tank Temp	Pump Air Pr.	Timer	Hour Meter	Pr. Gage #1	Pr. Gage #2	Flow Meter 1	Flow Meter 2	COMMENTS (e.g. shut down, start up, etc.)	Init

ALUM INJECTION SYSTEM
GAGE READING AND CALCULATIONS- 2001

Date	Time	Level (Inches)	Pump Pres.	Temp oC	Timer Setting	Hour Meter	Comments	Gal. Used	Days	Gal./day Rate	GPM Output	Op. Time/ 10 min. Cycle	GPD Previous
5/31/2003							flushed system						
6/14/2003	7:00 PM	76.8	60	24	1/4	8271.3		-3763					0
6/15/2003	4:30 PM	74.0	60	26	1/4	8272.3		137	0.90	153	2.29	0.465	32
6/16/2003	5:00 PM	71.0	60	30	1/4	8273.3		147	1.02	144	2.45	0.408	150
6/17/2003	9:15 AM	69.3	60	14	1/4	8274.0		83	0.68	123	1.98	0.431	138
6/17/2003	2:00 PM	68.5	60	30	1/2	8274.2		39	0.20	198	3.27	0.421	
6/18/2003	12:10 PM	64.3	60	30	1/2	8275.7		206	0.92	223	2.29	0.677	179
6/19/2003	12:30 PM	59.6	60	22	1/2	8277.5		230	1.01	227	2.13	0.740	225
6/20/2003	7:10 PM	53.9	60	14	1/2	8279.3		279	1.28	219	2.59	0.587	223
6/21/2003	4:50 PM	49.8	60	14	1/2	8280.8		201	0.90	223	2.23	0.692	219
6/22/2003	5:00 PM	45.3	60	17	1/2	8282.4		221	1.01	219	2.30	0.662	221
6/23/2003	5:10 PM	41.0	60	23	1/2	8283.9		211	1.01	209	2.34	0.621	216
6/24/2003	6:00 PM	36.7	60	20	1/2	8285.5		211	1.03	204	2.19	0.644	208
6/25/2003	1:00 PM	33.4	60	24	2/3	8286.7		162	0.79	204	2.25	0.632	204
6/26/2003	1:00 PM	28.3	60	26	2/3	8288.0		250	1.00	250	3.20	0.542	225
6/27/2003	4:45 PM	21.3	60	31	2/3	8290.9		343	1.16	297	1.97	1.045	271
6/28/2003	4:50 PM	16.0	60	33	2/3	8292.8		260	1.00	259	2.28	0.789	285
6/29/2003	4:50 PM	10.4	60	35	2/3	8294.8		274	1.00	274	2.29	0.833	263
6/30/2003	5:20 PM	6.7			2/3	8296.7		181	1.02	178	1.59	0.776	245
7/2/2003	9:20 AM	77.0	60	14		8300.1		-3445	1.67	-2067	-16.89	0.850	128
7/9/2003	5:05 PM	76.5	60	28	1	8300.1		25	7.32	3		0.000	-802
7/10/2003	4:40 PM	68.4	60	35	1	8303.2		397	0.98	404	2.13	1.314	116
7/11/2003	10:20 AM	62.8	60		1	8305.2		274	0.74	373	2.29	1.132	394
7/12/2003	10:45 AM	54.8	60	22.0	1	8308.0		392	1.02	385	2.33	1.147	380
7/13/2003	5:15 PM	44.3	60	27.0	1	8311.6		515	1.27	405	2.38	1.180	396
7/14/2003	5:00 PM	36.5	60	29.0	1	8314.4		382	0.99	386	2.28	1.179	400
7/15/2003	5:30 AM	32.7	60	14.0	1	8316.0		186	0.52	358	1.94	1.280	378
7/16/2003	4:30 PM	20.7	60	32.0	1	8320.0		588	1.46	403	2.45	1.143	393
7/17/2003	5:30 AM	17.0	60	14.0	1	8321.6		181	0.54	335	1.89	1.231	382
7/18/2003	4:30 PM	6.5	60	36.0	1	8325.6		515	1.46	353	2.14	1.143	349
7/18/2003	5:30 PM	75.9	60	36.0	1	8325.9		-3401	0.04			3.000	
7/19/2003	4:30 PM	67.6	60	39.0	1	8328.0		407	0.96	424	3.23	0.913	375
7/20/2003	2:00 PM	60.2	60	32.0	1	8331.2		363	0.90	405	1.89	1.488	418
7/21/2003	6:00 PM	50.2	60	36.0	1	8334.5		490	1.17	420	2.47	1.179	411
7/22/2003	5:00 PM	42.4	60	38.0	1	8337.2		382	0.96	399	2.36	1.174	415
7/23/2003	4:40 PM	34.1	60	40.0	1	8340.0		407	0.99	412	2.42	1.183	403
7/24/2003	2:30 PM	28.0	60	29.0	1	8342.3		299	0.91	329	2.17	1.053	387
7/25/2003	1:35 PM	20.0	60	28.0	1	8345.1		392	0.96	408	2.33	1.213	360
7/26/2003	1:30 PM	12.6	60	31.0	1	8347.8		363	1.00	364	2.24	1.129	389
7/27/2003	2:00 PM	6.4	60	32.0	1	8350.6		304	1.02	298	1.81	1.143	335
7/30/2003	3:30 PM	6.5	60	39.0	1	8359.5		-5	3.06	-2	-0.01	1.211	174
7/30/2003	5:00 PM	76.4	60	44.0	1	8359.5		-3425	0.06			0.000	
7/31/2003	7:15 PM	65.3	60	42.0	1	8362.7		544	1.09	497	2.83	1.219	145
8/1/2003	8:30 PM	54.8	60	34.0	1	8365.9		515	1.05	489	2.68	1.267	496
8/2/2003	5:00 PM	47.2	60	33.0	1	8368.2		372	0.85	436	2.70	1.122	481
8/3/2003	3:30 PM	38.7	60	24.0	1	8370.9		417	0.94	444	2.57	1.200	438
8/4/2003	5:00 PM	29.3	60	37c	1	8373.9		461	1.06	434	2.56	1.176	440
8/5/2003	6:30 PM	20.3	60		1	8377.0		441	1.06	415	2.37	1.216	428

NEWMAN LAKE ALUM INJECTION SYSTEM
2003 ALUM DELIVERY RECORDS

DEL #	B/L #	INV #	DEL.DATE	COST	COST TO DATE	# ALUM SOLUTION	%SOL	SPECIFIC GRAVITY	#ALUM	#ALUM TO DATE	EST. GAL. DEL.	AVG. DAILY FLOW(gpd)
1	18510	102125	2/18/2003	$1,473.08	$1,473.08	37,680	48.22%	1.3231	18,169	18,169	3,417	
2	18584	102205	3/4/2003	$1,484.29	$2,957.37	37,740	48.51%	1.3250	18,308	36,477	3,418	244
3	18623	102253	3/12/2003	$1,481.34	$4,438.71	37,860	48.26%	1.3235	18,271	54,748	3,432	429
4	18624	102248	3/17/2003	$1,496.50	$5,935.21	37,980	48.60%	1.3260	18,458	73,206	3,437	687
5	18651	102283	3/21/2003	$1,496.50	$7,431.71	37,980	48.60%	1.3260	18,458	91,665	3,437	859
6	18652	102299	3/25/2003	$1,033.45	$8,465.16	26,440	48.21%	1.3230	12,747	104,411	2,398	599
7	18783	102411	4/25/2003	$1,487.63	$9,952.79	37,340	49.14%	1.3304	18,349	122,760	3,368	109
8	18867	102491	5/16/2003	$1,511.91	$11,464.70	37,780	49.36%	1.3322	18,648	141,409	3,403	162
9	18921	102542	5/29/2003	$1,500.87	$12,965.57	37,880	48.87%	1.3282	18,512	159,921	3,422	263
10	19070	102672	7/2/2003	$1,494.88	$14,460.45	37,980	49.37%	1.3323	18,751	178,671	3,421	101
11	19146	12622	7/18/2003	$1,467.49	$15,927.94	37,360	49.27%	1.3313	18,407	197,079	3,367	210
12	102981	12900	7/30/2003	$1,426.77	$17,354.71	36,900	48.50%	1.3249	17,897	214,975	3,342	278
13	103152	13167	8/7/2003	$1,459.03	$18,813.74	37,220	49.17%	1.3307	18,301	233,276	3,356	420
14	103482	13519	8/21/2003	$1,458.29	$20,272.03	37,560	48.70%	1.3265	18,292	251,568	3,398	243
15	103872	13947	9/5/2003	$1,484.70	$21,756.73	37,760	49.32%	1.3318	18,623	270,191	3,402	227
16	104168	14146	9/16/2003	$1,500.87	$23,257.60	38,140	49.36%	1.3322	18,826	289,017	3,435	312
17	104231	14213	9/20/2003	$1,460.49	$24,718.09	37,780	48.49%	1.3248	18,320	307,336	3,422	855
18	104232	14301	9/25/2003	$1,460.49	$26,178.58	37,780	48.49%	1.3248	18,320	325,656	3,422	684
19	104233	14372	9/29/2003	$1,472.53	$27,651.11	37,420	49.36%	1.3322	18,471	344,127	3,370	843
20	104237	14523	10/4/2003	$1,443.82	$29,094.93	37,480	48.32%	1.3237	18,110	362,237	3,397	679
21	104234	14639	10/7/2003	$1,498.33	$30,593.26	38,060	49.38%	1.3324	18,794	381,031	3,428	1,143
22	104235	14825	10/11/2003	$1,519.38	$32,112.64	38,540	49.45%	1.3331	19,058	400,089	3,469	867
23	104236	14826	10/16/2003	$1,466.45	$33,579.09	37,840	48.61%	1.3260	18,394	418,483	3,424	685
TOTALS:				**$33,579.09**			**48.83% (avg.)**	**1.3279 (avg.)**	**418,483 Pounds 209 Tons**		**77,384**	**495 (avg.)**

Attachment J

2/25/2004

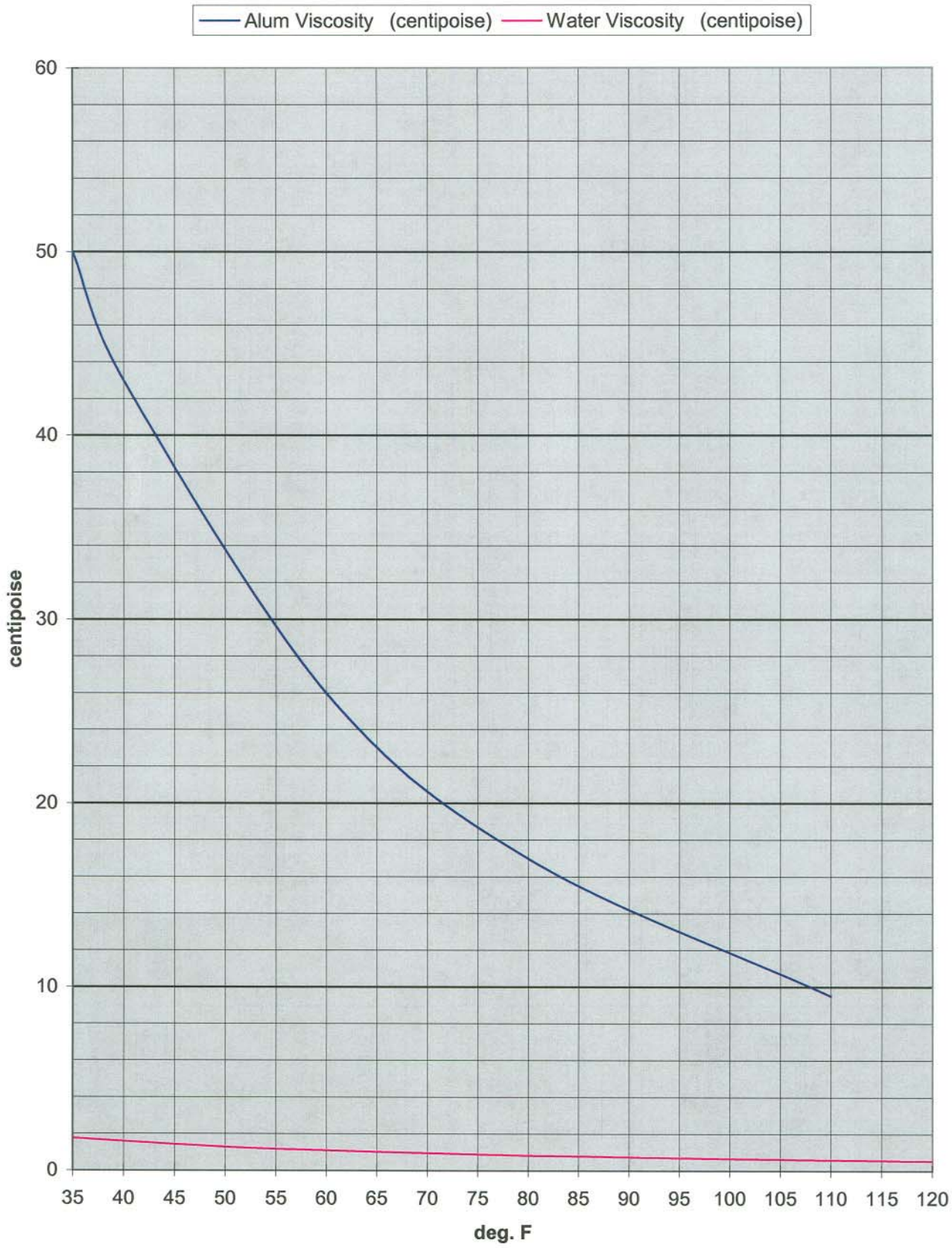
Newman Lake Alum Injection System

Parts List

Item	Description	Order From	Model/Item Number
Portable Air Compressor	Quincy Single Stage, 230V, 9.6 SCFM @ 90 psig, 20 Gal. Tank	Rogers Machinery, 922-0556	QTSP-5-20
Alum Injection Pump	Sand Piper, Air-powered double-diaphragm plastic pump, 4-gpm max.	Spokane Pump, 535-9771 or Great Western Pump, (206) 284-7505	PB1/4-A Type 2
Filter-regulator for pump air supply	American Lube,	Spokane Pump, 535-9771	129121 A04
Coalescing Filter	¼" Parker	" "	11F18E
Level monitor/Transducer	Mini Ranger Plus, wall-mount, Milltronics, and XRS5 ultrasonic transducer w 30 m. cable	Murrel-Hickey & Assoc., 425-454-0460	MNR01111110111 & XRS51412AO
Alarm Horn	Vibratone Horn, mfg by Federal Signal, 100db @10 ', 120V, .18A, w/ weather proof box	Grainger** (535-9882)	4A967 (horn) & 4A969 (box)
Air-Line Solenoid Valve	ASCO, gen. Service, ¼", 2-way, normally closed	" "	3UL51
Pressure Gage	Ametek, 2-1/2" liquid filled, 60 psi	" "	1X712
Suction Pressure Gage	Ametek, " " 30" hg-0-30 psi	" "	1X706
Cycle Timer	Paragon, 10 min. cycle, 120V	" "	2E209
Hour Meter		" "	6X137
Flow Meter	King Inst., P/MT flow meter, 3.5 gpm, 316 SS, w PVC end fit, ½" MPT x ¼" FPT, #75202103C-06	Ryan Herco, 253-395-1141	5828.006
In-Line Strainer	1" NPT, 40 mesh stainless steel screen, clear polyamide bowl	Grainger** (535-9882)	2P583
Alum Line Solenoid Valve	Hayward, ½", True Union Plastic Soln. Valve, Normally closed	Famillian NW, 536-3993	½" HCSV1050STV
Micro-Floc Generator		Sweetwater/ Teemark Corp., 1-800-323-0620	9643-002
Alum Line Y-Strainer	¾" NPT, transparent PVC, w/PVC 20 mesh screen	McMaster-Carr, (562) 692-5911	McMaster Part No. 44915K65

** Replacement parts for items are available through Grainger at 1-800-323-0620.

Viscosity Graph



Attachment L