INDEPENDENCE WASTEWATER MASTER PLAN

Prepared for:

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Version 1.0

INDEPENDENCE WASTEWATER MASTER PLAN

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ABBREVIATIONS

ADWF	Average Dry Weather Flow
AC	Acres
BOD	Biochemical Oxygen Demand
CDBG	Oregon Community Development Block Grant Program
CIP	Capital Improvement Program
DEQ	Oregon Department of Environmental Quality
DMR's	Daily Monitoring Reports
DU	Dwelling Units
EDD	Oregon Economic Development Department
FEMA	Federal Emergency Management Agency
Gpad	Gallons Per Acre Per Day
Gpdpc	Gallons Per Capita Per Day
GPM	Gallons Per Minute
HUD	Department of Housing and Urban Development
I/I	Infiltration and Inflow
Lb/day	Pounds per Day
LF	Lineal Feet
LS	Lump Sum
MMDWF	Maximum Monthly Dry Weather Flow
MGD	Million Gallons per Day
Mg/l	Milligram per Liter
MMWWF	Maximum Monthly Wet Weather Flow
NPDES	National Pollution Discharge Elimination System
OM&R	Operation Maintenance and Replacement
PDAF	Peak Daily Average Flow
pH	pH Factor
PVC	Polyvinyl Chloride
Q	Flow

Qf	Flow at Full Pipe
Qp	Peak Flow
RCP	Reinforced Concrete Pipe
RM	River Mile
SBR	Sequencing Batch Reactor
SDC	Systems Development Charges
SSES	1977 Sewer System Evaluation Survey
TDH	Total Dynamic Head
TMDL	Total Mass Daily Loading
TSS	Total Suspended Solids
UGB	Urban Growth Boundary
WWPIF	Wet Weather Peak Hydraulic Flow
WWTF	Waste Water Treatment Facility
ZID	Zone of Immediate Dilution

GLOSSARY OF TERMS

Average Dry Weather Flow:	Average of daily flows over the 6-month dry weather period, typically May through October.
Biochemical Oxygen Demand (BOD_5):	The quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure in five days at 20 degrees centigrade expressed in terms in weight and concentration [measurement units are milligrams per liter (mg/l)].
Capital Improvement Program:	A program that contains planned municipal improvement projects over time in accordance with the City's financial plan.
Composite Sample:	A technique where discrete samples are taken at separate times and are combined and treated as one sample.
Effluent:	Treated municipal sewage that flows out of a treatment facility.
E. Coli:	A bacteria found that has to potential to occur in warm bodied animals.
Facultative Lagoons:	A treatment process involving settlement of solids and reduction of organic oxygen demanding material by bacterial activity.
Grab Sample:	A technique where one sample is taken directly and distinctly.
Grit:	Inert solids that settle out a velocities below 1.0 feet per second.

Hypochlorite:	A chemical compound containing chlorine; used for disinfection.
Influent:	Untreated municipal sewage that flows into a treatment facility.
Infiltration and Inflow:	A combination of surface and groundwater that enters into sanitary sewers.
Interceptor:	A mainline backbone of a sewer collection system that typically receives wastewater from a collector sewer or other interceptor.
Maximum Monthly Dry Weather Flow:	The monthly flow with a 10-percent chance of reoccurrence. Frequently this flow occurs in the month of May.
Maximum Monthly Wet Weather Flow:	The maximum monthly flow associated with a 5-year, 24-hour storm. In Oregon communities west of the Cascade Mountains, this frequently occurs in January when groundwater is the highest.
NPDES Permit:	A permit that authorizes the discharge of pollution into the US Waterways and is authorized under Section 402 of the Clean Water Act. Permitees must verify permit compliance by monitoring effluent, maintaining records, and filing periodic reports.
Peak Daily Flow:	Peak daily flow resulting from a 5-year, 24-hour storm.
pH:	The standard for measurement of acidity and alkalinity.
Riprap:	A foundation of large stones used to reduce erosion potential.
Sewer:	A pipe or conduit conveying sewage or wastewater.
Sewage / Wastewater:	A combination of water-carried waste from residences, buildings, and industries in combination with ground and storm water.
Spray Irrigation:	Treated and disinfected wastewater used as irrigation for plants and/or crops.
Systems Development Charges:	Fees assessed to new development to reflect the impact on existing infrastructure and future facilities.
Telemetry:	A data stream that reports and transmits information to a separate and remote location.

Suspended Solids	A measure of the quantity of suspended material contained in the wastewater. The quantity of suspended material present influences the sizing of settling units, sludge handling, and disposal processes, as well as the effectiveness of disinfection.
Urban Growth Boundary:	The boundary around a city where planning and growth is expected to occur. Land outside the UGB will remain rural and land inside the UGB eventually be served by municipal infrastructure.
User:	Any residence or business that contributes sewage or wastewater to the municipal sewer system.
WWTF:	An arrangement of physical, biological and chemical processes used to treat wastewater. The existing treatment facility for the City of Independence is a four cell, controlled discharge, facultative lagoon system with chlorine disinfection.

1 EXECUTIVE SUMMARY

1.1 Introduction

The City of Independence is located in Polk County, Oregon approximately 14 miles southwest of Salem on the West Side of the Willamette River. The location of Independence with respect to the state of Oregon is shown in Figure 2.1 located in Section 2 of this report. The most recent official population count provided by the Portland State University Center for Population Research lists the population in July 2004 as 7,170 residents. Current development includes a mix of land uses ranging from heavy industrial, through commercial, institutional, and residential. In the last decade the City has experienced a dramatic increase in population and development.

This Wastewater Master Plan will include the following information:

1. Summary, review and analysis of historic influent flows to the Wastewater Treatment Facility (WWTF).
2. Summary, review and analysis of historic influent flows at key pump stations (9th Street, Riverview, and Oak Street Pump Stations)
3. Summary, review and analysis of historic influent flows and biochemical and solids loading at the WWTF.
4. Historic flow measurements that identify the magnitude of peak flows and a general trend of where they are occurring within the collection system.
5. Identification of pump station and WWTF design parameters in conformance with the Oregon Department of Environmental Quality (DEQ) guidelines for preliminary design reports.
6. Summary of current permit requirements, treatment standards, and monitoring requirements for the City's NPDES permit.
7. Identification of collection system and WWTF deficiencies and projected future improvements that will be required to accommodate growth and anticipated regulatory changes.

In 1998 the City initiated a system wide improvement of the collection and treatment facilities. This comprehensive program was successful at dramatically reducing I/I throughout the system, eliminating wet weather overflows, and providing additional capacity for future growth. Improvements completed as part of this project went beyond just patching existing problems, and instead, reconfigured the collection and treatment facilities to provide a rational and efficient sewerage system meeting current and projected needs.

Since the time the 1998 project was completed, the City has continued to pursue additional capital improvements and program changes to further reduce the impacts of I/I and replace aging sewerage system components. In addition to the capital improvements, the City has aggressively monitored and inspected new construction to ensure that improvements are watertight and in compliance with City and DEQ standards. This forward thinking, planning and program implementation has placed the

City in an excellent position to accommodate future development and growth in an efficient, responsible and cost effective manner.

1.2 Current Conditions

Population growth during the last decade has resulted in dramatic increases in flows and loads to the WWTF. The wastewater treatment facility provides sufficient treatment to operate in compliance with the current NPDES permit. Although the City has some remaining capacity within the current sewerage system, continued growth at the current rate will require major capital improvements within the next 5 to 10 years.

1.2.1 Sewage Collection System

In 1998, a citywide sewerage system improvement project successfully eliminated wet weather overflows within the collection system. New pump stations, force mains and interceptors constructed as part of the 1998 improvement project have sufficient capacity to accommodate projected growth through the 20-year design period.

Some of the perimeter regions of the current Urban Growth Boundary (UGB) include land that has adequate sewer service to accommodate existing development, but insufficient capacity to serve the projected needs at full build-out.

1.2.2 Sewage Lagoon Treatment Facility

The most immediate concern is that population growth will result in summer time storage volumes in excess of the available lagoon capacity. This will trigger an expansion of the lagoon facility, or a change in how the City manages wastewater. Sludge and solids accumulation within the lagoon cells, primarily lagoon cell No. 1, is reported by public works staff to be noticeable. Effluent quality and mass load discharges to the Willamette River are currently within permitted limits.

1.3 Future Development

Impacts to the WWTF were evaluated using the city-wide population growth projections. Specific land uses and remaining developable lands were used to estimate the impacts within individual sewer basins and the associated major collection system components.

1.3.1 Future DEQ Permit Requirements

During the preparation of this Wastewater Master Plan members of the consultant team met with representatives of the Oregon Department of Environmental Quality (DEQ). DEQ was not able to identify specific changes that should be anticipated as part of the next permit renewal. Because the City is projected to exhaust the dry weather storage capacity of the existing lagoon system within the next 5 to 10 years, a modified approach or strategy of managing effluent must be developed. The development of effluent spray irrigation, or the discharge of cleaner effluent from a mechanical plant during summer months was discussed with DEQ. Both approaches are technically feasible but will require further detailed discussions, analysis and approvals by DEQ.

1.3.2 Population Growth and Projected Flows

The certified estimated populations for Independence for the years 2003 and 2004 are 6,850 and 7,170 respectively. The average population between April 2003 and April 2004 when the current flows and loading were analyzed was 6,975 persons. A population growth of 3.5% was assumed in the development of this plan. Applying this growth rate to the 2004 population of 7,170 will result in a year 2025 population of 14,766. Current and projected system wide flows and loads are:

Table 1.1 Summary of Current and Projected System Wide Flows/Loading

FLOW TYPE	Units	Value	CURRENT (per capita)	PROJECTED 2025
Average Dry Weather Flow (ADWF)	mgd	0.46	66 gpcpd	1.04
Wet Weather Peak Hydraulic Flow ($WWPIF_{5)}$	mgd	7.6	N.A.	9.9
Total Suspended Solids (TSS)	lb/day	698	0.10 lb/day/pc	1,478
Biological Oxygen Demand ($BOD_{5)}$	lb/day	809	0.12 lb/day/pc	1,772

1.4 Wastewater Treatment Alternatives

Two alternatives were identified for wastewater treatment. Alternate No. 1 expanded the current lagoon based treatment facility to develop additional treatment and storage capacity. The projected BOD loading rates will remain within the theoretical capacity of the existing facultative process for the larger lagoon system. Expansion of the summer (dry weather) storage capacity will be necessary. Due to technical limitations inherent to this treatment process, facultative lagoons are unable to consistently reduce the pollutant concentrations to levels within the capabilities of mechanical plants. One of the most significant problems is the presence of algae, particularly in the final lagoon cell. A more exact decanting process, and filtered removal of algae, will allow for the operational life of the lagoon system to be extended while continuously improving effluent quality during wet weather months.

Alternate No. 2 involves the construction and incorporation of a mechanical treatment facility within the process scheme. The mechanical process is significantly more efficient than the facultative lagoons, producing effluent that is cleaner, sometimes by an order of magnitude. The cleaner effluent expands the number of options for reclaiming land used for lagoon treatment, and the types of land uses that can be spray irrigated. Discharge to the Willamette River during the wet weather months will be at pollutant concentrations significantly lower than the current lagoon effluent. As a result, in theory the City will be able to discharge larger volumes of water and remain within the current permit standards.

1.5 Treated Effluent Disposal/Spray Irrigation Alternatives

Construction of a mechanical treatment facility would provide cleaner effluent with the potential for dry weather (June 1 through October 31) discharge to the Willamette River. However, it is somewhat speculative whether or not DEQ will allow additional organic and thermal loads to the river during the dry weather period. An application for a modified permit allowing summer discharge will likely require that the City provide a comparison of potential alternatives. Ultimately

the burden will be on the City to show that summer discharge to the river is the most appropriate means of handling treated effluent balancing capital cost, long term operation and maintenance costs, and environmental impacts. In preparing this report it has been assumed that other alternatives will be considered and advanced. This will allow for a more rational discussion of the most appropriate solution as the treatment facility is expanded and improved.

Three alternatives for spray irrigation of treated effluent were considered. Alternate No. 1 assumes the development of a new irrigation facility dedicated for use by the City of Independence at a location approximately 3-miles northwest of the Independence WWTF. This property (Riddle property) was previously identified by the City of Monmouth as an alternate site for their spray irrigation facilities. The property owner has indicated an interest in receiving the treated effluent. Treated effluent would be pumped directly from the Independence WWTF to the site.

Alternate No. 2 assumes development of an irrigation disposal site within 1-mile of the WWTF, and would be dedicated to the exclusive use by the City of Independence. No specific location has been identified and there is no guarantee that a suitable site will be located in this close proximity. However, this alternative provides a low-end estimate in the potential range of costs. Both alternate Nos. 1 and 2 will require additional investigation, analysis, DEQ certification, and negotiation with the property owner(s) before they can be deemed viable solutions.

Alternate No. 3 assumes the development of additional irrigation areas at the site of the City of Monmouth's current irrigation facility. Monmouth's engineering consultant (Whitaker Engineering, Inc.) has completed preliminary analysis to confirm that the projected combined flows for Monmouth and Independence could be accommodated within the properties adjacent to the current site. Initial agreement has been reached with the affected property owners and DEQ certification has been initiated.

In addition to the cost associated with constructing the spray irrigation site improvements, under Alternate No. 3, Independence would need to construct a pump station and forcemain to convey treated effluent to the chlorine contact chamber at the Monmouth WWTF. To convey the combined effluent flows from the Monmouth WWTF to the irrigation site would require structural, mechanical and electrical improvements at the chlorine contact chamber.

1.6 Collection System Improvements

The collection system improvements completed as part of the 1998 Sewerage System Improvements Project, have established a solid framework and foundation to handle current and projected collection needs. Future development and build-out of properties within the UGB will require construction of new gravity sewers, pump stations and associated pressure forcemains. Although these infrastructure improvements are the responsibility of the developing interests, it is in the long-term interest of the residents and rate payers, to expand the system in a rational manner that distributes the cost in a fair and equitable manner. The estimated costs also reflect a level of service and quality consistent with recent pump stations and pipe construction.

This master plan has identified preliminary alignments and locations for major facilities that will allow for extension of service to undeveloped areas. However, it should be noted that the specific

location and sizing of facilities is dependent on the timing and phasing of development and construction. Additional engineering analysis and design may determine that changes or modification to the configuration and components is warranted. In all cases, the City must balance the long-term benefits to the public with the immediate needs of the proposed developments.

The estimated costs for collection system improvements are summarized for each basin in Section 6 with detailed estimates provided in Appendix B. It is also important to note that the improvements identified for extension to serve undeveloped areas do not need to be built until development is imminent. Furthermore, the cost to construct the extension and expansions to serve undeveloped properties is not the responsibility of the larger population. Rather, these should be borne by the developers and future residents who directly benefit. The costs developed in this plan can be applied and adjusted as part of a systems development charge (SDC) methodology that will allow the City to anticipate and begin collecting SDC's in a manner that future development pays their fair share for the impacts to the larger sewerage system.

Some of the improvements identified in this report represent logical extensions of current facilities. Others recognize that the expansion of properties beyond the current service area represents a significant change to the affected basin, and that a relocation of a pump station and/or interceptor sewer is warranted.

1.7 Recommended Improvements

1.7.1 Collection System

A long term recommended approach and strategy for developing and expanding the City's collection system is identified in this Master Plan. As noted above, the recommended alignments and facilities are believed to represent an efficient and orderly approach to serving the long-term needs of the City. Associated cost estimates are developed to allow for the subsequent development of a systems development charge (SDC) methodology, and as an initial point of discussion and direction for future development projects. The total estimated cost for all major component improvements identified is **$4,668,221**.

1.7.2 Wastewater Treatment Facility

Near-Term Improvements to the City's WWTF have been identified and represent modifications to the existing treatment facility that will improve operational efficiency, and extend the design life of the current facilities. Many of the improvements identified can be incorporated into a long-term strategy for wastewater management, including the treatment alternatives identified in this report. These should be reviewed and prioritized by City staff to develop timeline for implementation. The most critical need identified by Public Works staff include:

- Screening and grit removal to reduce the solids loading on the lagoons.
- Telemetry and reporting hardware and software to allow for remote reporting, recording and archiving of operations.
- Inspection and assessment of the effluent sewer and Willamette River Outfall.

The total estimated cost for Near-Term Improvements is **$728,726.**

Long-term wastewater treatment appears to be most efficiently and cost effectively provided by a mechanical (SBR, oxidation ditch or activated sludge) treatment plant. Although this approach represents a higher initial capital investment, it offers the City a long-term solution with a great deal of flexibility. As growth surrounds the existing lagoons, residents may become increasingly intolerant of the visual presence and odors. The higher quality effluent will also improve water quality of the Willamette River. Although it is not a certainty and will require additional analysis and permit negotiations, the potential for summer time discharge to the Willamette River is a theoretical possibility that is not available for consideration with facultative lagoons. The total estimated cost to develop and construct a mechanical treatment plant to serve the projected needs through the year 2025 is **$4,212,864.**

1.7.3 Effluent Disposal

Spray irrigation effluent disposal remains an option that can be incorporated into both treatment alternatives. The estimated cost to participate in a joint Monmouth/Independence spray irrigation program appears to be approximately 10-25% higher than developing a facility dedicated to the City of Independence, and located in close proximity to the current WWTF. However, identifying permitting and developing a new facility dedicated to use for the City of Independence will require a focused effort with no guarantee that a suitable location will be identified.

The estimated capital costs associated with participating in an expanded joint irrigation facility with the City of Monmouth is **$2,164,320.** On this basis it is recommended that the City continue discussions with the City of Monmouth to confirm the availability and timeline necessary to develop this capacity. Spray irrigation or some other means of managing and disposing of excess dry weather effluent does not appear necessary until the City's population reaches approximately 8,790 which is projected to occur in the year 2010 assuming a 3.5% growth rate.

2 INTRODUCTION

2.1 Authorization

In July 2004 the City of Independence selected David Evans and Associates, Inc. (DEA) to assist them with the preparation of this Sanitary Sewer Master Plan. In August 2004, DEA entered into a formal contract with the City to complete the Sanitary Sewer Master Plan.

2.2 Purpose and Scope

This 2005 Wastewater Master Plan is developed with attention to the following goals:

1. **Accommodate Growth:** Provide treatment and collection system capacity to accommodate growth through the year 2025 in an orderly, environmentally responsible and cost-effective manner.
2. **Meet Requirements of NPDES Permit:** Comply with the stated and implicit requirements of the City's discharge permit with DEQ, and wherever possible, anticipate the impacts of future modifications. Provide 80-percent BOD_5 and 65-percent TSS removal. Contain and treat all of the sewage flows resulting from a 5-year, 24-hour storm and storage of influent during the 5-year containment period. Have the ability to upgrade the treatment process to remove nitrogen and other pollutants.
3. **Improve River Water Quality:** Improve the quality of effluent discharged to the Willamette River including reducing BOD_5, solids and other loads (mass discharge, lbs/day) to the River.
4. **Enhance Open Space Habitat:** Provide recreational open space and habitat enhancement, where feasible and economical.
5. **Conserve Water:** Provide the ability to irrigate with treated effluent in lieu of discharge to the Willamette River.
6. **Minimize Cost to Rate-Payers:** Construct the most cost-effective facility that meets regulatory, environmental and resource protection requirements and goals. Use the existing wastewater facility to the greatest extent possible. Provide automated, operator-friendly features applying appropriate, and where possible, "simple" technologies and equipment.
7. **Be A Good Neighbor:** Provide facilities and improvements that are compatible with properties and uses adjacent to the wastewater treatment facilities and properties.
8. **Public Safety:** Enhance public access yet ensure safety and security requirements.

2.3 Study Area

The study area for this report encompasses all of the area contained within the Urban Growth Boundary (UGB). The study area includes two significant waterways. The Willamette River establishes the eastern boundary of the study area, and Ash Creek flows through the center splitting into the North and South Forks at approximately the center of the City Limits and UGB. The portions of the Willamette River and Ash Creek that are contained within the study area include 100-year floodways and flood plains defined by FEMA. Many of the existing and proposed sewerage facilities are located within or immediately adjacent to the floodway/flood plains.

Figure 2.1 located on the following page shows the location of Independence with respect to the State of Oregon. Figure 2.2 includes a map of the overall Study Area (UBG) and the existing service areas (City Limits).

2.4 Planning Process

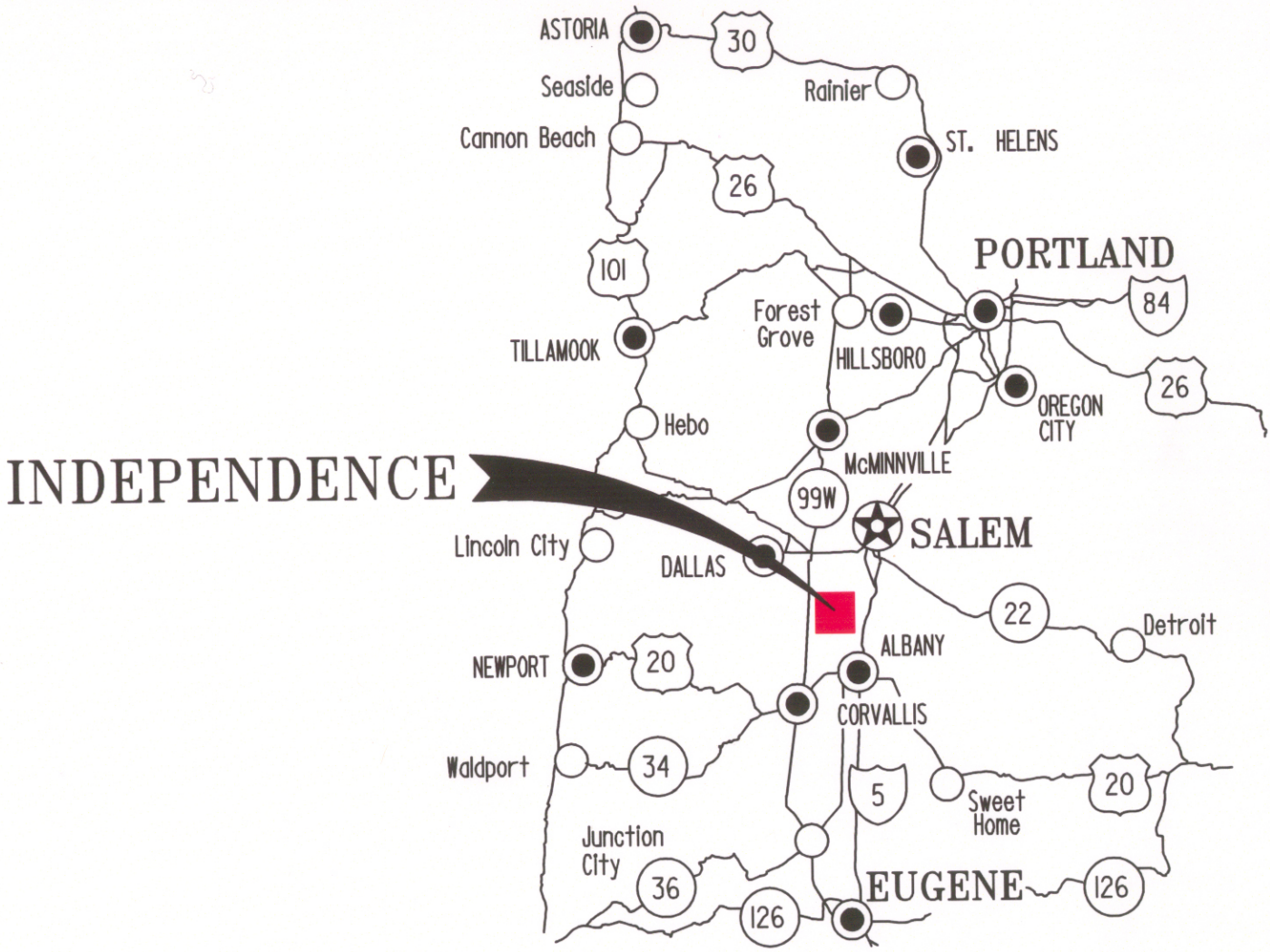
Engineers met and spoke regularly with City staff and DEQ during the drafting, review and preparation of the final Master Plan. Meetings with City staff focused on obtaining and verifying the most up-to-date information, assessing operator's needs and preferences, and examining the existing facility. The Final Sanitary Sewer Master Plan will be submitted for approval by City staff and the City Council. Alternatives and cost estimates related to wastewater treatment and disposal were provided to the City of Monmouth for review and discussion.

2.5 Existing Sanitary Sewer Planning Documents

The following documents represent previous planning efforts for the City sanitary sewerage system and were reviewed in the preparation of this Master Plan:

- "*Sanitary Sewer Preliminary Design Report*", City of Independence, Oregon, 1996
- "*The City of Independence Sewerage Facilities Plan Update, Volume I and II – Report*", August 1994
- "*Television Inspection Reports of the City of Independence*", Insituform Technologies, 1996
- "*Smoke Testing Reports of the City of Independence*", Insituform Technologies, 1996

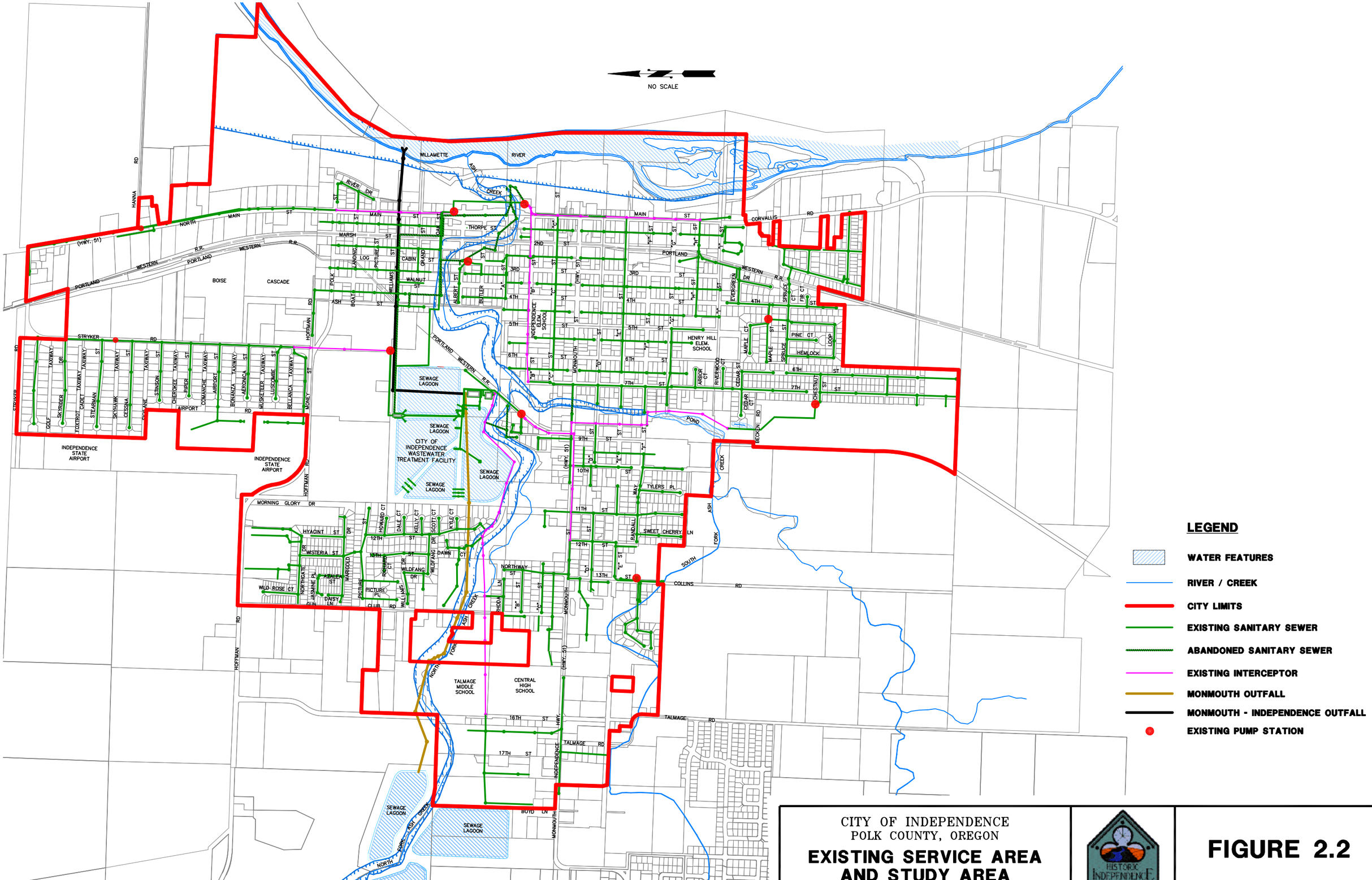
In addition to these recent reports, C&G Engineering, Inc. prepared a *1977 Sewer System Evaluation Survey* (SSES) for the Cities of Monmouth and Independence. Westech Engineering prepared a *1983 Sanitary Sewer System Infiltration/Inflow Report* for the City. Both the SSES and the Infiltration/Inflow report were provided for DEA's review. Although much of the information in these reports is outdated, some of it still describes condition of portions of the existing collection system, and provides some history for the City's sewerage system.



CITY OF INDEPENDENCE
POLK COUNTY, OREGON

VICINITY MAP

FIGURE 2.1



CITY OF INDEPENDENCE
POLK COUNTY, OREGON

EXISTING SERVICE AREA AND STUDY AREA

FIGURE 2.2

3 CURRENT CONDITIONS

The earliest portions of the Independence collection system were constructed in 1925. In the early 1950's the Cities of Monmouth and Independence constructed a two-city primary treatment plant. The collection system for Independence was originally configured to direct all wastewater generated within the City's service area to the primary treatment plant at the confluence of Ash Creek and the Willamette River. This system was subject to flooding by the Willamette River and Ash Creek, and in the 1960's became overloaded as a result of population growth.

In 1963, the two cities constructed separate lagoon treatment facilities and improved a common effluent outfall to the Willamette River. As part of the lagoon construction project, the original treatment plant was converted to a lift station (Riverview Pump Station) to pump the City's wastewater west to the newly constructed lagoon treatment facility.

In 1998 the City initiated system wide improvements to the collection and treatment facilities. The modifications to the collection system resulted in a reconfiguration of the sewerage basins resulting in a more rational approach that improved hydraulic efficiency of the overall system, and lowered the hydraulic gradeline of critical sections. Prior to the construction of these improvements the collection and treatment systems were overloaded during wet weather resulting in frequent overflows. The improvements included:

- ***Riverview Pump Station:*** Demolition of the original treatment facility (also original Riverview Pump Station) and replacement with a new submersible station and new 16-inch force main to the WWTF.
- ***I/I Remediation - North Interceptor:*** Elimination of approximately 1,000 feet of the North Interceptor located within the floodplain.
- ***I/I Remediation - Creek Interceptor:*** Elimination of the Creek Interceptor that ran parallel to Ash Creek and was located within the flood plain and below the 100-year flood elevation.
- ***New Pump Stations and Force Mains:*** In addition to the replacement of the Riverview Pump Station, three additional new pump stations were built to allow for the reconfiguration of the collection system resulting in an increase in hydraulic capacity, and eliminating the need for the segments of the North and Creek interceptors located within the flood plain. The three additional new pump stations include 9th Street, Albert Street, and Oak Street Pump Stations. Associated forcemains were constructed to convey flow directly or indirectly to the WWTF.
- ***I/I Remediation – Middle Interceptor:*** Replacement of approximately 1,500 feet of the Middle Interceptor with larger diameter pipe and a deeper pipe alignment. All Middle Interceptor flows west of Ash Creek were redirected into the 9th Street Pump Station.
- ***Telemetry:*** Installation of full reporting telemetry at each of the new or replacement pump stations and at the Stryker Road, Maple Street, North, and 13th Street Pump Stations.
- ***Headworks Improvements:*** Construction of a new influent vault and 12-inch Parshall flume at the WWTF to allow for the centralized measurement of wastewater influent. Installation of influent measurement and recording equipment, and a composite sampler at the influent Parshall flume.

- ***Lagoon Transfer Structure:*** Construction of a new transfer structure and piping between Lagoon Cell Nos. 2 and 3 allowing for more efficient decanting of the partially treated effluent.
- ***Disconnection of Roof Drains:*** Disconnection of roof drains and storm sewer catch basins identified during the 1995 smoke testing.
- ***Sanitary Sewer Lateral:*** Replacement of sanitary sewer service laterals previously identified as leaking during smoke testing in 1995.

The 1998 improvements dramatically reduced I/I and wet weather flows to the treatment facility, and eliminated overflows within the collection system. The I/I reduction achieved by the 1998 improvements is considered sufficient to allow the City to convey and treat the remaining wet weather sewage flows. Since the 1998 project was completed, the City has further reduced I/I by implementing additional measures recommended in the 1996 Preliminary Design Report. In addition to capital improvement projects the City has aggressively monitored new construction to ensure that new sewer and structures are water tight.

The current sanitary sewerage system serving the City of Independence consists of a gravity and pumped collection system, and a lagoon based wastewater treatment facility (WWTF). Treated effluent is measured, chlorinated then discharged to a 36-inch diameter outfall line which flows east approximately 3/4 of a mile before discharging into the Willamette River. The outfall line is shared with the City of Monmouth.

In general, the WWTF has performed adequately and operated within the permitted tolerances for effluent concentrations and mass loadings. However, although the general pattern of performance for concentrations of BOD_5 and TSS, and total mass loads has remained below the permitted tolerances, the general trend has been upward reflecting the increase in population. Due to the buffering characteristic of a lagoon system, peak hydraulic and organic loadings will tend to even out, and to some extent mask a larger trend toward capacity. It is important to recognize that flows and loads are increasing and anticipate that performance will continue to degrade. It is likely that dramatic changes in performance will occur as design flows and loads, and technical limitations are approached. Additional treatment capacity, and/or modifications to the current treatment process are necessary and should be anticipated in the immediate future. A detailed analysis and discussion is provided in Chapters 4 and 5 of this master plan.

3.1 Existing Sewage Collection System

The existing collection system is broken into five major basins, labeled alphabetically A through E. Within the five basins wastewater flows primarily by gravity to one of five major pump stations that convey the wastewater to the treatment facility (WWTF) through force mains (pressurized sewers). The collection system pipe materials include vitrified clay, concrete and PVC. Although all sewers constructed since the 1980's are polyvinyl chloride (PVC), the older clay or concrete materials are "leaky" and contribute much of the City's I/I.

3.1.1 Existing Collection System Configuration and Components

In general the collection system was originally configured to flow by gravity toward the confluence of Ash Creek and the Willamette River. This mimics the natural drainage ways through town and is a rational approach that on the surface appears to be efficient and environmentally appropriate. Although this approach is intended to be efficient in terms of energy consumption, it requires that a number of facilities be located adjacent to streams, within flood plains, and subject to high water and potential damage. The net result has been that very large amounts of clean water were introduced to the waste treatment flow during flood events.

In the 1960's, the relocation of treatment facilities required that the cumulative flows delivered by gravity to the Riverview treatment facility, be redirected to a location approximately 4,700 feet west of this confluence of the influent sewers. As a result the system required more pumping energy to convey influent to the WWTF.

During the preparation of the 1998 Preliminary Design Report, the entire approach to collection and treatment was reviewed and evaluated in the context of what was the most appropriate, efficient and environmentally responsible approach to managing wastewater. As a result, major reconfiguration of the collection system was completed which eliminated several old interceptors vulnerable to flooding, increased the hydraulic capacity of key interceptors and pump stations, redirected some basins to follow a shorter path to the WWTF, and lowered the hydraulic grade line for key interceptors. Figure 3.1 provides a summary of the existing collection system configuration.

As part of the City's 1998 Sanitary Sewer System Improvement Project, reconfigured collection system basins were established. Sewage is conveyed within the basin by gravity sewers and small lift stations to a basin influent pump station. Each influent pump station conveys the sewage through pressure pipes directly to the WWTF headworks facility.

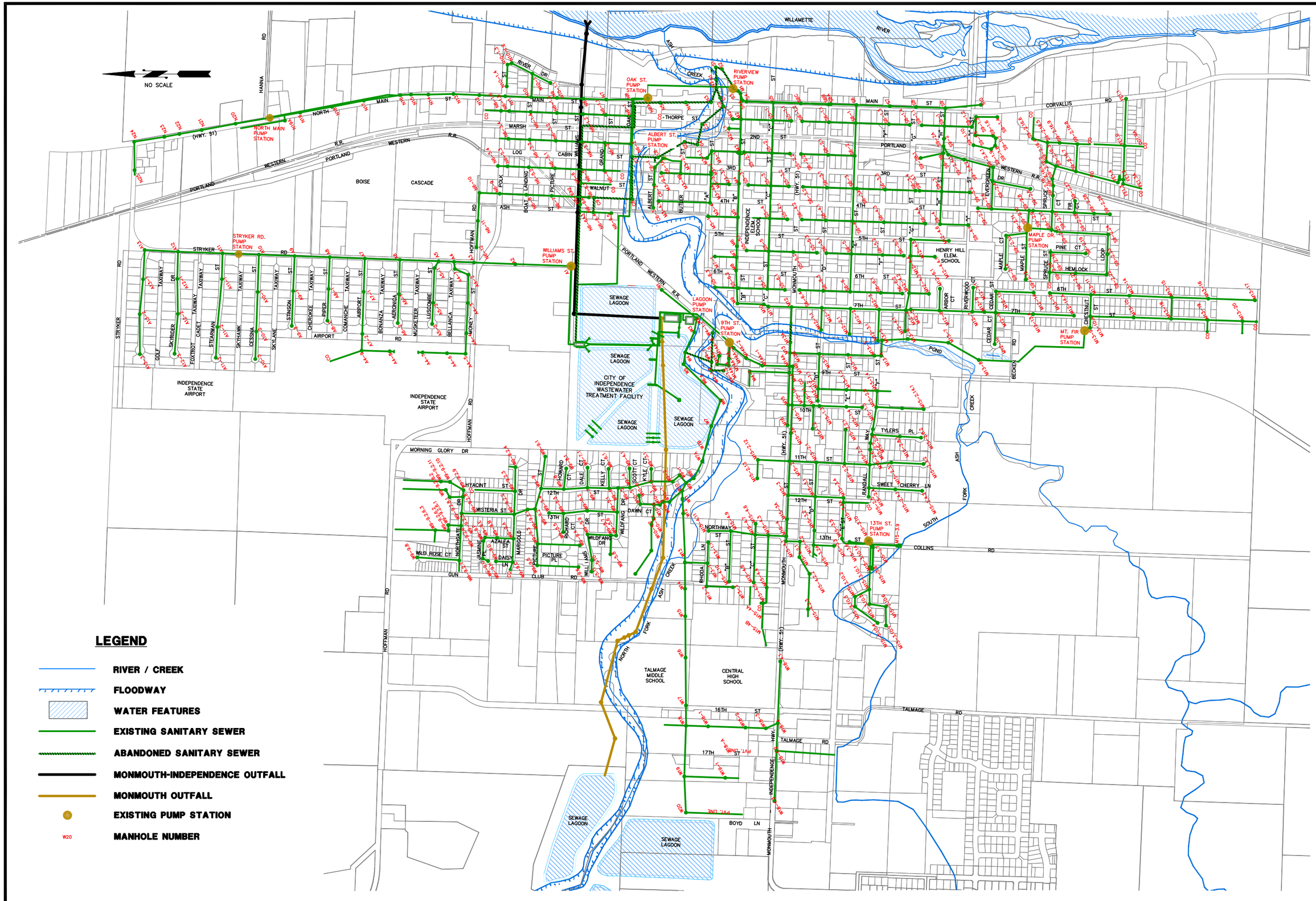


FIGURE 3.1

CITY OF INDEPENDENCE
POLK COUNTY, OREGON

EXISTING SANITARY SEWER MAP

3.1.2 Existing Sewer Basins

The existing collection system is broken into five basins, labeled alphabetically A through E. Each basin pump station then pumps the wastewater via pressure mains to the headworks of the WWTF. A detailed description for each basin is included in the following pages. Figure 3.2 is a map provided at the end of this section (3.1.2) that shows the location of each basin within the existing sewer system.

3.1.2.1 Basin 'A'

Basin A is located in the northeast corner of the City and includes residential, commercial and industrial land uses. Pipe materials are primarily concrete pipe with mortar joints, and vitrified clay. The south half of the basin is a portion of the City referred to as “Old Town” and is served by some of the oldest segments of the collection system. Much of the Old Town collection system is in poor condition and known to contribute large amounts of I/I.

The North Interceptor is the primary interceptor serving Basin A, and runs North to South in Hwy 51. The North Interceptor ranges in pipe diameter from 8 inches to 12 inches and discharges into the Oak Street Pump Station.

The upper end of the basin begins at the intersection of Stryker Road then flows south to the Oak Street Pump Station. There is one small pump station (North Main Pump Station) located at the far north end at the intersection of Main Street and Hanna Road. During average storms this area experiences moderate to heavy I/I with the heaviest amounts contributed by the sub-basins in the vicinity of Riverview Drive on the east side of Main Street, and the “Old Town” area which is comprised of Walnut, Log Cabin, and Boat Landing streets. The lowest segments of the line contained heavy root masses and were abandoned as part of the 1998 improvements.

The North Main Pump Station has been identified for replacement and relocation as part of the Hwy 51 Improvement project that is scheduled to begin construction February 2006.

3.1.2.2 Basin 'B'

Basin B consists of the southeast corner of the City including the downtown commercial area and numerous areas of residential development. Although this is an older portion of town, a number of the main lines serving the older parts of Basin B were replaced with plastic pipe in the early 1980’s. Unfortunately, the associated service laterals were not replaced at the same time as the mainline. With the exception of some relatively small pockets, this area is built-out with paved street improvements that include curbs, storm sewers and catch basins.

All of Basin B drains to the South Interceptor which runs along the east side of Main Street beginning at I Street and proceeding to the north before discharging to the Riverview Pump Station in the vicinity of Main and B Streets. The basins that are tributary to this interceptor have been the subject of a great deal of I/I investigative work. Smoke testing completed in August of 1996 identified numerous connected catch basins and roof drains that were subsequently disconnected as part of the 1998 improvement project. As part of that project, service laterals that were identified as faulty during the 1996 smoke testing were also replaced.

As part of the 1998 improvement project, a small submersible pump station was constructed at the north edge of the basin (Albert Street Pump Station). The Albert Street Pump Station allowed for the elimination of the original Creek Interceptor that was located adjacent to Ash Creek and known to contribute significant amounts of inflow. The Albert Street Pump Station serves approximately 8 homes with additional reserve capacity.

There are two additional, relatively small, sewage lift stations. Maple Street Pump Station, which is located in a landscaped area adjacent to Maple Street, is a small package pump station which discharges to a 4-inch diameter force main conveying flows one block east to a manhole in the intersection of Maple and 4th Streets. Flow from this discharge manhole is conveyed by gravity to the South Interceptor.

The Briar Lift Station is small submersible station that serves approximately 50 homes that are part of the Freedom Estates development constructed in 2003. This station lifts sewage and conveys it approximately 50 feet to the Briar Road before discharging to the gravity sewer system.

In the 1996 Preliminary Design Report the South Interceptor was identified as very close to capacity. However, key bottlenecks in the gravity line were replaced with larger diameter pipes as part of the 2002 Main Street Streetscape project and the upgraded interceptor now has sufficient hydraulic capacity to accommodate projected future flows.

3.1.2.3 Basin 'C'

Basin C, in the City's southwest area, includes residential and commercial/retail land uses. Residential land within this basin is a mix of older neighborhoods and some of the newest developments in the City. Mt. Fir Subdivision, which is located at the southeast corner of the basin, is one of the most recent developments.

At full build-out the Mt. Fir property will extend far enough that an additional major pump station will be required. The original Mt. Fir Pump Station was constructed in 1999 and has provisions for expansion to add a third submersible pump if future growth or annexation requires. The station pumps flow generated in sub-basin C2, to a discharge manhole approximately 1,500 feet to the north. As part of the pump station improvements, the gravity sewer immediately downstream from the discharge manhole was replaced to increase hydraulic capacity.

The southwest corner of Basin C is served by the 13th Street Pump Station, which is a small submersible pump station. The 13th Street Pump Station is sufficiently sized to accommodate current flows from this relatively small sub-basin but has limited residual capacity and no provisions for expansion. All flows from Basin C are directed to the 9th Street Pump Station, which pumps directly to the WWTF via a 10-inch diameter forcemain.

3.1.2.4 Basin 'D'

Basin D, in the City's West Side, incorporates a wide range of land uses including residential, commercial retail, general commercial, and school/institutional. The entire basin is served by gravity sewers including the West Interceptor which follows an alignment that is roughly in the geographic middle of the basin. This interceptor flows from west to east in an alignment approximately parallel to Ash Creek and crossing under the creek from the south side to the north side approximately ¼ mile

west of the WWTF. The West Interceptor discharges into the Lagoon Pump Station located at the southeast corner of the WWTF from which flows are pumped via a 10-inch force main to the influent vault and influent parshall flume at the north end of the WWTF.

Much of the basin is concrete pipe with a mix of mortar and rubber gasket joints. The Northgate residential subdivision at the northeast corner of Basin D is relatively new construction that included PVC pipe and rubber gasket joints, and pre-cast manholes. This development is believed to be relatively "watertight". The older portions of the collection system, including the Wildfang Subdivision immediately south of Northgate, include construction and materials reported to be leaking and contributing significant quantities of I/I. While completing field investigations in preparation for the 1998 Sewer System Improvements, relatively clear flows were noted in the far west segments of the West Interceptor during heavy rainfall events. However, subsequent smoke testing did not identify specific faults in service laterals, storm water or roof drain connections.

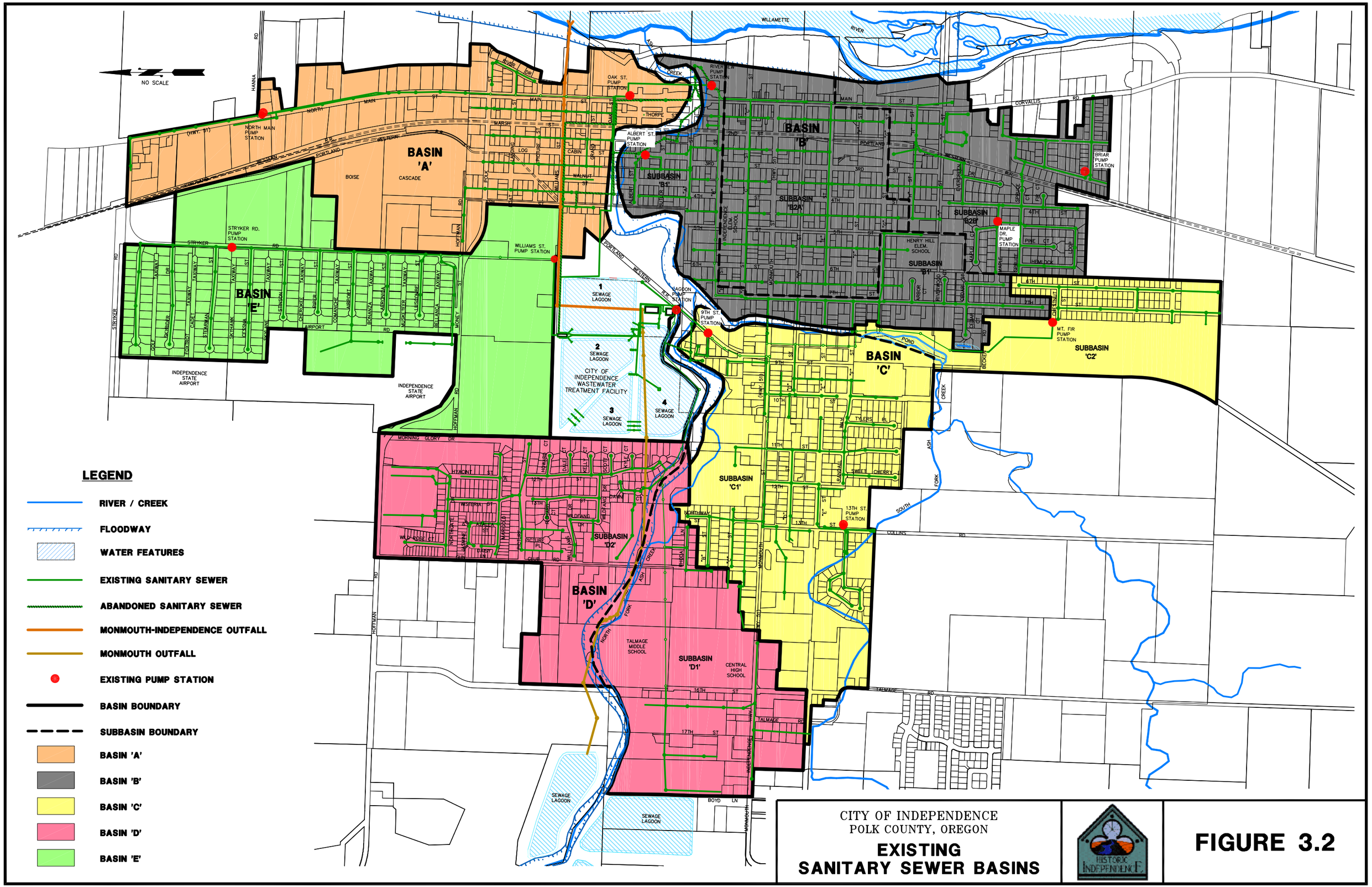
The current urban growth boundary includes approximately 47 acres of additional land at the northwest corner of the current basin limits. This land is anticipated for future residential development. Due to topographic limitations, expansion of sanitary sewer into this area will require construction of an additional pump station, as noted and described later in this report.

3.1.2.5 Basin 'E'

Basin E is north of the City's sewage lagoons and includes the airport and airpark residential area. Land uses include residential, commercial, and industrial properties. Most of the residential development in the basin is served by PVC pipe with rubber gasket joints. The industrial properties could be redeveloped and characteristically have the potential for development with significantly higher water use and subsequent wastewater generation.

The north end of the Airpark residential area is served by a small package (wetpit/drypit) pump station (Stryker Road Pump Station). This station serves an estimated 78 residential lots and potentially 22.2 additional acres of industrial zoned land at the north end of Stryker Road. The cumulative flows in the basin discharge to the Williams Street Pump Station, which is, located immediately northeast of the WWTF. The Williams Street Pump Station is a wetpit/drypit configuration which pumps to the influent equalization vault at the north end of the WWTF via a 6-inch forcemain. The Williams Street Interceptor and pump station will require replacement with larger facilities to accommodate projected future flows. As noted above, the development of industrial properties in this basin could dramatically impact the peak wastewater flows. For this reason wherever possible new sewerage facilities should include consideration for expansion and phasing.

The location and configuration of the Existing Sewer Basins are shown in Figure 3.2.



CITY OF INDEPENDENCE
POLK COUNTY, OREGON

EXISTING SANITARY SEWER BASINS

FIGURE 3.2

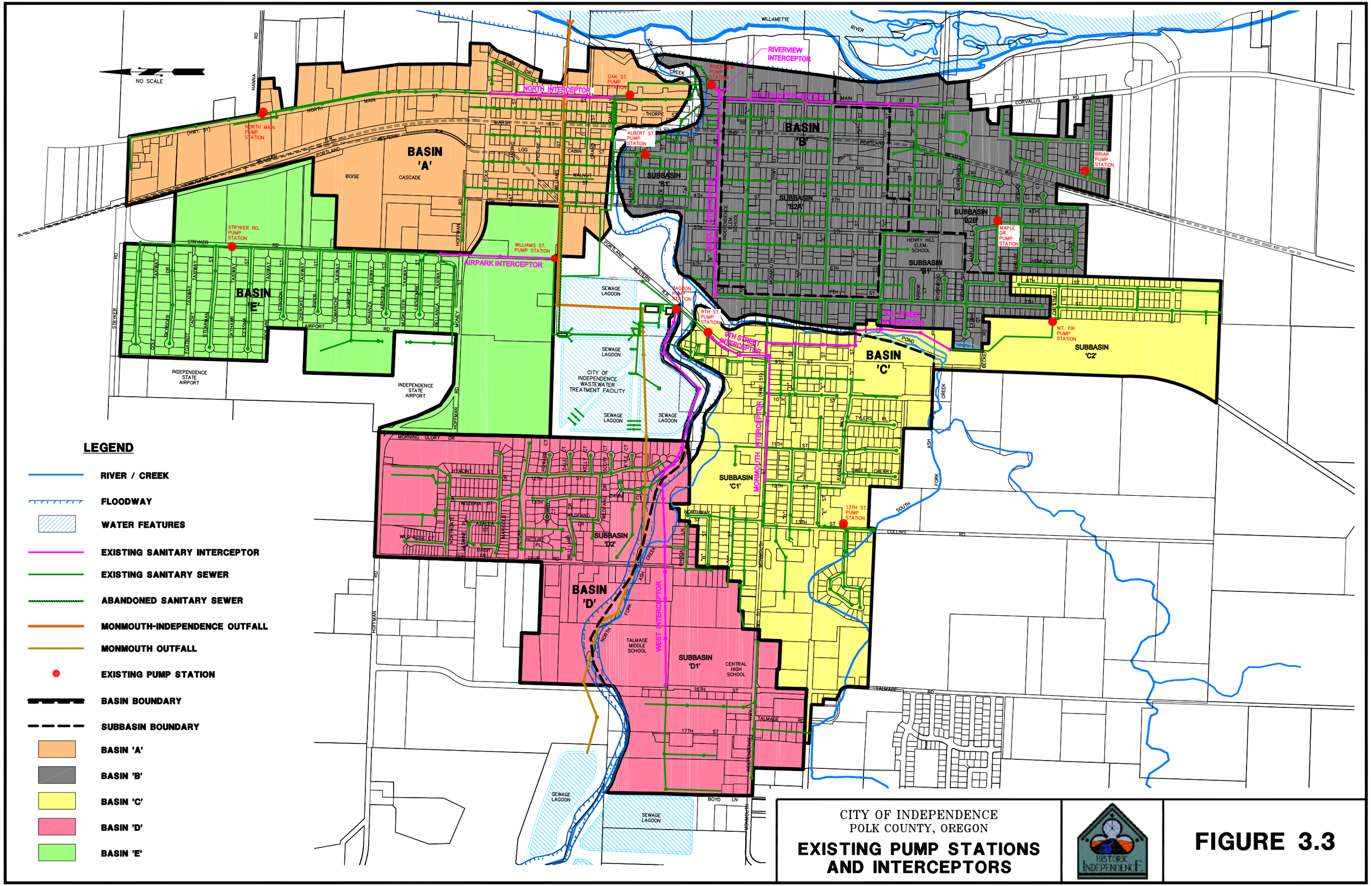
3.1.3 Existing Pump Stations and Interceptors

Background information including capacities, configurations, size, depth and slopes of existing interceptors, pump stations and force mains was obtained from a variety of records made available by City staff. While this information is believed to be representative of the current configuration, all key components should be confirmed as part of the preliminary design effort in support of any future improvements.

Major interceptors within the service area consist of pipe sizes ranging from 10-inch to 21-inches in size. The pump and lift stations range in size from 100 gallons per minute (gpm) to 2,250 gpm, with force main diameters ranging from 4-inches to 16-inches. Table 3.1 summarizes the pump station and force main information. The location of existing pump stations and interceptors are shown in Figure 3.3.

Table 3.1 Pump Station Inventory

Pump Station Name/Location/.Date	No. of Pumps	Horse Power Voltage, RPM	Rated Capacity	Type of Pumps	Level Controls	Comm Type	Force Main
Riverview Pump Station Main St. and B St. Constructed 1998	2	60 Hp, 460V, 3Ø 1770 rpm	2,250 gpm @ 65' TDH (Riverview Only) 2,100 gpm @ 69' TDH (with Oak St.)	Flygt Model CP3300.090-644 HT	Flygt Multitrode	Auto Dialer	1,162 lf 14" C905 3,611 lf 16" C905 to WWTF Flume
Oak Street Pump Station Oak St. and Main St. Constructed 1998	2	20 Hp, 460V, 3Ø 1750 rpm	1,070 gpm @ 45' TDH (Oak St. Only) 740 gpm @ 59' TDH (w/ Riverview)	Flygt Model CP3152.091-432 MT	Flygt Multitrode	Auto Dialer	50 lf of 8" C900 3,611 lf of 16" C905 to WWTF Flume
9th St. Pump Station Constructed 1998	2	20 Hp, 460V, 3Ø 1750 rpm	900 gpm @ 65' TDH	Flygt Model CP3152.091.432 MT	Flygt Multitrode	Auto Dialer	2,160 lf of 10" C900 and DIP to WWTF Flume
Lagoon Pump Station Remodeled 1999	2 w/ capacity for 3	40 Hp, 460V, 3Ø 1185 rpm	1509 gpm @ 65' TDH	Flygt Model CP3201.090-639MT	Floats	Auto Dialer	1,493 LF of 10-inch C-900 PVC to WWTF Flume
Williams St. Pump Station Constructed 1979 At Lagoon Entrance	2	15 Hp, 230V, 1Ø	300 gpm @ 42' TDH (256 gpm measured)	Cornell Posi-Prime 4NMDH-VC-7.5 (SN 16098	Floats	AutoDialer	680 Lf of 4"to WWTF Flume
Albert St. Pump Station Albert St. and Log Cabin Constructed 1998	2	5 Hp, 460V, 3Ø 1150 rpm	147 gpm @ 22.3' TDH	Hydronix S4MVX, 8.5" Dia. Impeller	Floats	Auto Dialer	342 lf of 4" C900
North Main Pump Station To be Replaced 2006 OR 51 and Hanna Road	2	5 Hp, 230V, 3Ø 1750 rpm	100 gpm @ 30' TDH	Hydromatic Submersibles SH Series	Floats	Auto Dialer	1,550 lf of 4"
13th Street Pump Station 13th and E St. Modified	2	3 Hp, 230V, 3Ø	192 gpm @ 26.4' TDH	Flygt NP 3085,P92, 410 impeller	Ultrasonic	Auto Dialer	320 lf of 4" Cast Iron
Maple St. Pump Station Maple Dr. and Maple Ct. Modified 1990	2	2 Hp, 230V, 1150 rpm	250 gpm @ 15' TDH	Hydromatic Submersible 7.54" Impeller	Floats	Auto Dialer	170 lf of 4"
Mt. Fir Pump Station 7th and Chestnut St. Constructed 1999	2 w/ Cap. for 3	7.5 Hp, 230V, 3Ø 1750 rpm	568 gpm @ 20' TDH (1 Pump) 700 gpm @ 70' TDH (2 pumps)	Flygt MP-3127	Ultrasonic	Auto Dialer	1,450 lf of 8" C900
Stryker Rd. Pump Station Stryker Rd and Cessna Street	2	3 Hp, 230V, 1750 rpm	155 gpm @ 20' TDH	Hydromatic Model 40 MPV	Floats	Auto Dialer	312 lf of 4-inch C900 PVC
Briar Rd Pump Station Briar and Alder St. Constructed 2002	2	3 Hp, 230V, 1Ø 1750 rpm	200 gpm @ 22' TDH	Flygt NP3085.092-462	Ultrasonic	Auto Dialer	50 lf of 4" Ductile Iron



CITY OF INDEPENDENCE
POLK COUNTY, OREGON

EXISTING PUMP STATIONS AND INTERCEPTORS

FIGURE 3.3

3.2 Wastewater Treatment Facility

In the early 1950's, treatment of the City's sanitary sewage was provided by a primary clarifier constructed within the 100-year flood plain at the confluence of Ash Creek and the Willamette River. The original plant provided primary wastewater treatment for both Monmouth and Independence.

In the 1960's, in response to increasing population, more stringent treatment standards, and the plant's location in the flood plain, the cities elected to separate their wastewater collection and treatment systems, and constructed separate lagoon treatment facilities. Independence constructed what are now Cell Nos. 2 and 3 in the northwest corner of the current WWTF.

In 1978, to provide additional lagoon volume to accommodate a higher population, the City lagoons were expanded by adding two more cells. The cells constructed in 1978 are currently labeled Nos. 1 and 4. Chlorine disinfection was improved with construction of a 1-ton cylinder chlorine storage room, chlorinators, injectors, and an 8,400 gallon chlorine contact basin. The City's treated effluent then discharged to the 36-inch Independence-Monmouth effluent outfall that was constructed at the same time as the lagoon upgrade. In 1998, the WWTF was upgraded to provide a centralized point of collection, influent flow measurement, and improve flow control to lagoons. Influent flow measurement allowed the plant to better address the I/I issue. The flow control improvements gave operators more flexibility in operation, and eliminated problem areas.

Today, the WWTF is virtually unchanged from 1998. Treated effluent from the two cities continues to be discharged to the Willamette River during permitted wet weather months, via the common 36-inch-diameter river outfall built during 1978.

3.2.1 Description

The Independence WWTF is a 4-cell, controlled discharge, facultative lagoon system with chlorine disinfection and discharge to the main stem of the Willamette River. The sequential (1 through 4) flow maximizes detention time.

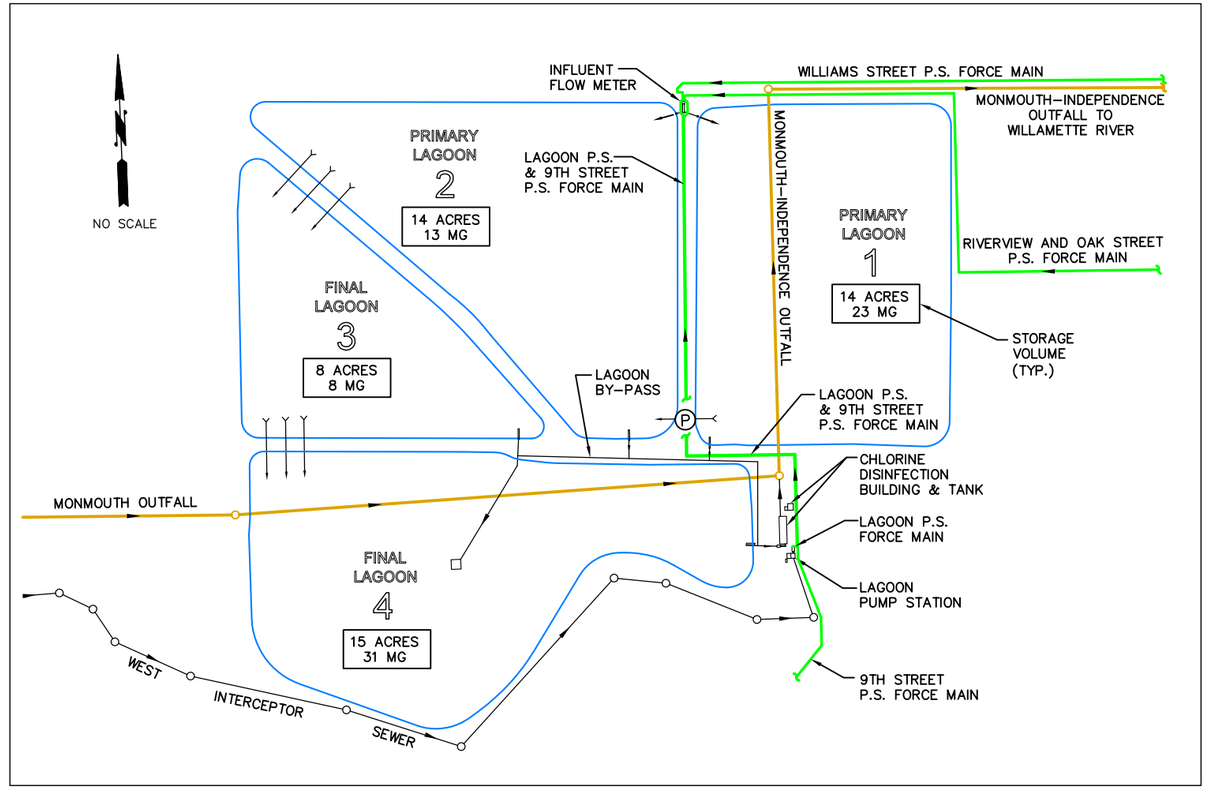
Figure *3.4 Existing Lagoon Treatment Facility Site Plan and Schematic* is a schematic and plan of the facility. Table 3.2 provides a summary of current design parameters.

Table 3.2 Existing Treatment Facility Design Data

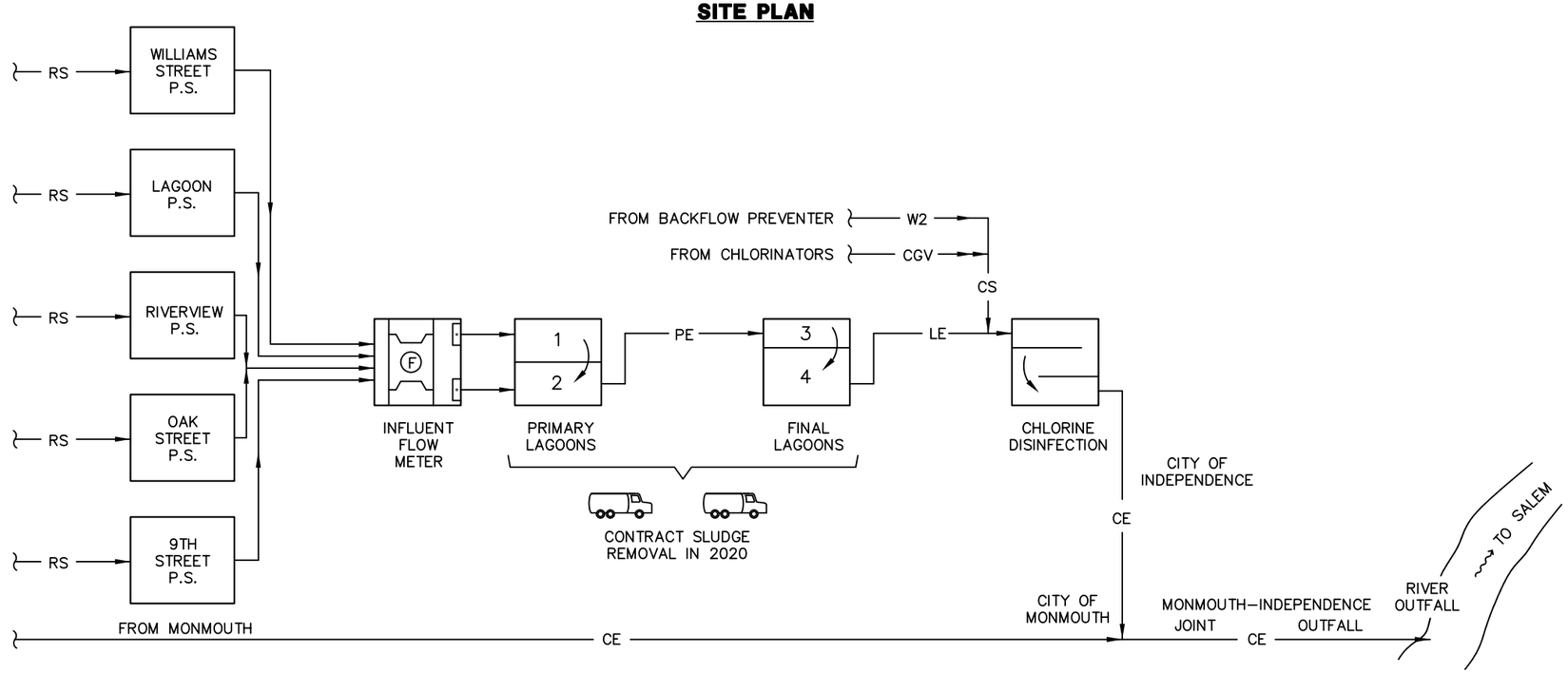
HEADWORKS				
Flow Stabilization Vault	8.0 mgd			
Parshall Flume Size	12 inches			
Parshall Flume Range	0.23 - 7.4 mgd			
Flow Splitter Structure	8.0 mgd			
FACULTATIVE LAGOONS				
	Lagoon No. 1	Lagoon No. 2	Lagoon No. 3	Lagoon No. 4
Minimum Water Elevation	167.5’	173.5’	167.5’	162.0’
Maximum Water Elevation	172.5’	176.3’	170.5’	169.0’
Usable Storage Volume (acre - feet)	70	40	25	95
Surface Area at Average Depth (acre)	14	14.2	8.3	14.6
DISCHARGE PERIOD				
Summer Holding Period:	June 1 through October 31			
Winter Discharge Period:	November 1 through May 31			
DISINFECTION				
Type:	Chlorine Gas Injection			
Capacity:	210 feet long, 3.0 mgd			
Detention Time:	1 hour including outfall			
Parshall Flume:	9 inch, 3.0 mgd			
OUTFALL DISCHARGE				
36-inch Shared Outfall with the City of Monmouth to the Willamette River				
Material:	Concrete Pipe			

LEGEND

CE	CHLORINATED EFFLUENT
CGV	CHLORINE GAS VACUUM
CS	CHLORINE SOLUTION
DS	DIGESTED SLUDGE
F	FLOW METER
FM	FORCE MAIN
LE	LAGOON EFFLUENT
(P)	PUMP
PE	PRIMARY EFFLUENT
RAS	RETURN SLUDGE
RS	RAW SEWAGE
SDS	SULFUR DIOXIDE SOLUTION
WAS	WASTE SLUDGE
W1	WATER – POTABLE
W2	WATER – PROCESS
W3	WATER – IRRIGATION



SITE PLAN



SCHEMATIC

FIGURE 3.4

CITY OF INDEPENDENCE
POLK COUNTY, OREGON

EXISTING LAGOON TREATMENT SITE PLAN & SCHEMATIC

3.2.2 Current NPDES Permit Requirements

The City's current NPDES permit is valid through April 30, 2009. A copy of the permit is included as Appendix A of this report. The permit allows discharge from an outfall to the Willamette River located at R.M. 95.5. Table 3.3 NPDES Permit Requirements – Treatment Standards summarizes the Biological Oxygen Demand (BOD_5), Total Suspended Solids (TSS) and bacterial limits set by the City's permit. Table 3.4 NPDES Permit Requirements – Monitoring Requirements summarizes the parameter, frequency, and method of monitoring set by the City's permit.

Table 3.3 NPDES PERMIT REQUIREMENTS – Treatment Standards

	Avg. Effluent Concentration		Mass Load Limits		
Parameter	**Monthly**	**Weekly**	**Month Avg.**	**Weekly Avg.**	**Daily Max.**
BOD	30 mg/l	45 mg/l	500 lb/day	750 lb/day	1,000 lb/day
TSS	50 mg/l	80 mg/l	830 lb/day	1,200 lb day	1,700 lb/day
Fecal	200 MPN pe	400 MPN pe			

E. Coli Bacteria shall not exceed 126 organisms per 100-ml monthly geometric mean. No single sample shall exceed 406 organisms per 100mL.
pH shall be in the range of 6.0 – 9.0
BOD_5 and TSS Removal efficiency shall not be less than 85% monthly average for BOD_5 and 65% monthly for TSS
Total Residual Chlorine shall not exceed 1.0 mg/l daily maximum.

Outfall Discharge Requirements

Discharge from the outfall is permitted to the Willamette River during the time period from November 1 through May 31. The allowable mixing zone for the outfall extends fifty (50) feet from the west bank of the river and extends from a point fifty (50) feet upstream from the outfall, to a point three hundred (300) feet downstream from the outfall. The Zone of Immediate Dilution (ZID) shall be defined as that portion of the allowable mixing zone that is within thirty (30) feet of the point of discharge.

Monitoring Requirements

Under Schedule B of the permit the City must monitor and report influent flows and loads:

Table 3.4 NPDES PERMIT – Monitoring Requirements

Parameter	Minimum Frequency	Type of Sample
Total Daily Flow (MGD)	Daily	Measurement
Flow Meter Calibration	Annually	Verification
BOD_5	Weekly	Composite
TSS	Weekly	Composite
pH	3/Week	Grab
Treated effluent must be monitored and reported for the following:		
Total Daily Flow (MGD)	Daily	Measurement
Flow Meter Calibration	Annually	Verification
BOD_5	Weekly	Composite
Parameter	**Minimum Frequency**	**Type of Sample**
TSS	Weekly	Composite
pH	3/Week	Grab
E. Coli	Weekly	Calculation
Quantity of Chlorine Used	Daily	Measurement
Chlorine Residual	Daily	Grab
BOD_5 & TSS Pounds Discharged	Weekly	Calculation
BOD_5 & TSS Average % Removed	Monthly	Calculation
Iron	Annually	Grab
Mercury	Annually	Grab
Dissolved Oxygen	Monthly	Grab
Ammonia	Monthly	Grab
Effluent Temperature Daily Max.	2/Week	Grab
Excess Thermal Load	Weekly	Calculation

Iron and mercury monitoring shall occur annually in January. Dissolved oxygen, ammonia and effluent temperature shall be monitored only when discharging. Excess thermal loading shall be monitored from October 15 through May 15.

3.2.3 Headworks

All flow delivered to the WWTF is pumped through one of four force mains. All solids conveyed to the plant pass through a pump station wetwell and pump impeller that inherently prevents solids larger than 3 inches in diameter from entering the influent wastestream. For this reason the current treatment facility has minimal influent handling facilities consisting of measurement, sampling and flow control.

The major components of the headworks consist of a concrete flow equalization vault, a 12-inch Parshall flume, and ultrasonic flow measurement device. Instantaneous flow measurement is recorded on a circle chart recorder and total accumulated flow is recorded by a flow totalizer then logged daily by the operator. The Parshall flume has a staff gage for manual measurement and calibration of the flow meter. An influent composite sampler is adjacent to the Parshall flume in a

vandal proof pre-fabricated fiberglass structure. The sampler measures the strength of the influent wastewater.

All of the existing force mains discharge to the WWTF at the concrete flow equalization structure upstream of the Parshall flume. Flows pass from the equalization structure via an 18-inch gravity pipe flowing into the Parshall flume. After passing through the Parshall flume, the flow stream enters a flow splitter configured with slide gates to direct influent to either Lagoon No. 1 or 2.

3.2.4 Sewage Treatment Lagoons

The City lagoon treatment system is a "facultative" lagoon process, involving different microorganisms in the upper, middle and bottom layers. The City ponds are considered "facultative" because they are relatively shallow and have an anaerobic (oxygen-deprived) zone at the bottom, an aerobic zone at the top, and an intermediate aerobic/anaerobic zone in between. Each zone supports different types of microorganisms that convert the waste to cell matter and biochemical products.

Although the organisms can only survive in their zone of origin, the three zones are symbiotic – work together – in removing the soluble BOD from the upper zones and, on the bottom, digesting the organic part of the sludge.

Much of a lagoon's oxygen budget is from photosynthesis of algae during the daylight hours. At night, algae cells are consumed by bacteria, which in turn produce carbon dioxide. The carbon dioxide is used for the following day's production of new algae cells. Although algae is important to a lagoon's operation, at the effluent end, the small 1-8 micron cells are very difficult to remove and cause elevated levels of effluent solids and BOD.

Lagoons have some advantages over "mechanical" treatment facilities. Properly sized lagoons provide BOD removal at rates of 10 to 50 lbs/day per acre with an overall removal efficiency between 65 and 90 percent. They also provide excellent settling of solids during all flow conditions. Lagoons, unlike mechanical plants, are resistant to upset from sudden inflow. The lagoon's capacity to store wastewater during the low-flow season helps operators stay within the permitted loading limits by reducing the effluent flow as required. In areas where land is flat and inexpensive, lagoons are often the least costly means of wastewater treatment for small cities. They are very easy to operate, and require only a Class I operator's license.

On the other hand, lagoons have some disadvantages. They cannot reliably attain the secondary standards of 30 mg/l effluent BOD or 85 percent BOD removal as can activated sludge treatment plants. Algae is a principal problem, some times making it difficult to achieve effluent solids below 30 mg/l during algae blooms. Since more lagoon area is needed to increase storage and treatment capacity, space, competing uses, and land cost become issues as a community grows.

Lagoon Operation – Wastewater typically flows sequentially through the lagoon cells, although the transfer pump and overflow pipes allow for different flow patterns if conditions dictate. To operate the facility, the operator calculates influent and effluent flows, pollutant loads, and the chlorine feed rate. Influent flows are measured at the headworks. The magnitude of effluent flow is determined on the basis of BOD and solids removal requirements, and the need to store or discharge effluent. The chlorine feed is a function of the effluent flow and quality, and bacteria sampling data.

If a lagoon is too shallow, the light and warmth in the water column can increase algae blooms. The Transfer Pump and outlet structures are used to maintain sufficient depths in the lagoons to optimize effluent quality.

Lagoon cell Nos. 1 and 2 serve as the primary cells with cell Nos. 3 and 4 providing secondary treatment. As a result of the phased approach to constructing the lagoons, the bottom and the operational minimum water elevation of cell No. 1 is approximately 6-feet below that of cell No. 2. Although it appears to be possible to transfer partially treated wastewater directly from cell No. 1 to the final cell No. 4, historically, public works staff transferred much of the partially treated wastewater from lagoon No. 1 to No. 2 via a transfer pump that is located at the southwest corner of cell No. 1. The transfer pump is a single pump and is not capable of transferring large volumes of waste in a short period of time. Although staff must monitor and balance the levels of the two primary cells, the operational flexibility of the larger system is sufficient that the transfer pump has not been a major concern or bottleneck in the past.

There are a number of gravity type transfer and overflow pipes connecting the cells, which allows for a wide range of operational configurations. With the exception of the pipe connecting cell Nos. 3 and 4, all transfer pipes connecting lagoon cells are configured with valves to allow for variable flow transfers and/or isolation. As part of the 1998 improvement project a new transfer and flow control structure was built between cell Nos. 2 and 3. The transfer structure includes an inlet configuration at cell No. 2 that utilizes flexible 18-inch diameter polyethylene pipe that can be adjusted in elevation to control the flow rate and decanting depth. In addition to this transfer structure, staff gages were installed at all four lagoon cells to allow for the measurement and monitoring of lagoon depths.

Wind causes wave action within the lagoons and requires riprap to be placed at the edges to reduce the potential for erosion. Periodically additional riprap needs to be placed replacing eroded material. During the summer of 2004 the City Public Works crews installed approximately 2,320 tons of riprap around all four lagoons. Greater quantities were placed at the southern edge of each cell to reduce the erosion potential caused by waves created by prevailing wind.

3.2.5 Chlorine Disinfection System

The WWTF's chlorine system relies on one-ton chlorine cylinders, which are loaded and unloaded with the monorail and hoist in the Chlorine Bay. For safety, chlorine is "pulled" from the cylinders by a vacuum created by the "chlorine injectors," causing flow to stop in the event of a pipe failure. The injectors mix water with the chlorine to produce a strong chlorine solution that is mixed into the effluent flow through a perforated-pipe chlorine "diffuser" located in the flowstream. An effluent valve downstream of the diffuser was the original chlorine-mixing device, although this valve is unused at this time.

After the effluent is mixed with chlorine, it discharges to chlorine contact basin, where sufficient time is permitted for the chlorine to kill the bacteria prior to discharge and dilution in the effluent outfall. A chlorine contact time of at least 60 minutes is required, but the actual time is considerably greater for most flow conditions.

The amount of chlorine needed for an acceptable kill is affected by algae solids and BOD_5, and by the state of the nitrogen in the discharge of Lagoon 4. As new discharge permits are issued, DEQ may lower the allowable "residual" chlorine discharged by treatment plant, to reduce toxicity in the outfall zone.

3.2.6 Irrigation Set

To eliminate some of the stored water during the dry weather storage season, plant operators deploy a reel-type spray irrigation set that sprays partially treated effluent over the surface of Lagoon Cell No. 1. Large setbacks from residential property lines are required by the health department for this type of spray irrigation, and operators have placed it along the lagoon margins. Operators report that evaporation of the spray helps to reduce the stored volume.

3.2.7 Willamette River Outfall

The City's disinfected effluent is discharged to the joint effluent outfall at the manhole just north of the chlorine contact basin. Flow enters the manhole from the City's 15-inch asbestos-cement discharge pipe and Monmouth's 24-inch, 10,750-foot-long RCP outfall pipe. Exiting the manhole is the 36-inch RCP Independence-Monmouth effluent outfall. The 4,500-foot outfall proceeds north under Lagoon 1 then east along Williams Street to the bank of the Willamette River. From the discharge manhole on the bank, a sloped, 24-inch, 50-foot-long outfall pipe extends to a spill pad at the bottom of the river.

In 1995 the Cities of Independence and Monmouth completed at Mixing Zone Study for the Wastewater Treatment Facility Outfall. The study was performed to determine if the residual chlorine discharges meet water quality requirements in the Willamette River. The results of the study indicated that the chlorine residual was negligible at the outfall due to the transport time of the effluent between the WWTF and the Willamette River.

It should be noted that the outfall location underneath Lagoon Nos. 1 and 4 limits construction options should the outfall require repair or replacement. There is no indication that the outfall pipe underneath either lagoon was not soundly constructed. However, the pipe is currently 27 years old and will eventually require maintenance or repair. It is beyond the scope of this study to investigate the outfall pipe current condition. As part of the proposed capital improvement program, it is recommended that the entire outfall pipe alignment be inspected using closed circuit TV inspection equipment. In addition, it is recommended that the City consider relocating the discharge/outfall pipe when implementing the proposed wastewater treatment and disposal alternatives.

3.2.8 Treatment Performance

The performance of the existing WWTF was evaluated by reviewing plant flow and sampling data for the time period between 1996 and 2004. Since the most recent data is usually the best, the past several years provide the best indication of the system's performance. Copies of the Daily Monitoring Reports (DMR's) from April 2000 to May 2004 and the analysis of percent removal of BOD and TSS for that time period are included in Appendix E.

3.2.8.1 Biochemical Oxygen Demand (BOD) Removal

Table 3.5 *BOD and Solids Removal, 2001-2004* summarizes the BOD and solids data and removal efficiencies for that period. The efficiencies, computed from the incoming loads and the outgoing, "months-old" effluent, may be seen to be less than that required by the plant's DEQ permit. However, DEQ realizes that low percent removal efficiencies may sometimes be the result of low incoming loads at the time discharge is occurring, and that the presence of algae masks the treatment performance.

Because of the algae's active photosynthesis and respiration, BOD is not a good indicator of plant performance. In other words, if the difficult task of removing algae from the effluent at the outlet of the lagoons could be accomplished the plant's BOD and solids removal performance would be substantially greater. Regardless, the DEQ permit requirements still apply.

Biochemical Oxygen Demand (BOD) - This parameter combines the oxygen need of all oxygen-using pollutants into a single parameter. The data indicates that in 2004 the lagoons removed an average of 92 percent of the influent BOD, with a minimum efficiency of 87-percent. An 85-percent minimum BOD removal is specified in the DEQ permit.

However, the effluent BOD concentration levels have, in general, been well below the 30-mg/l limit. In the 2003-04 period, effluent BOD concentrations from 5 to 30 mg/l were recorded, with an average measurement of 10 mg/l.

Table 3.5 BOD and Solids Removal, 2001 to 2004

Month	Percent BOD_5 Removal (%)	Percent TSS Removal (%)	Month	Percent BOD_5 Removal (%)	Percent TSS Removal (%)
	2004			**2002**	
January	88	84	January	90	76
February	95	87	February	90	75
March	96	94	March	66	19
April	87	95	April	85	56
May	94	98	May	96	89
	2003		December	69	50
January	88	74		**2001**	
February	91	70	January	79	65
March	89	60	February	91	53
April	95	93	March	77	51
May	97	93	April	85	72
November	94	84	May	96	92
December	89	59	November	90	93
			December	89	72

3.2.8.2 Total Suspended Solids (TSS) Removal

Effluent Total Suspended Solids (TSS) – In 2003-04, effluent solids levels ranging from 4.0 to 25.7 mg/l were recorded, with an average value of 14.7 mg/l. Even the high range values are below the existing permit monthly average limitation of 50 mg/l. The higher TSS values were recorded during a time of algae problems.

The City's NPDES permit has a requirement for 65-percent removal of TSS. It can be seen that the 2004-draft permit's monthly average limit of 50mg/l hasn't been exceeded since 2001. Data from recent years indicates that meeting the new TSS limits will not be an immediate problem.

Water fowl have been known to congregate at the water lagoons. If there are a large number of water fowl, summer algae blooms have been known to occur in water bodies. Algae blooms contribute to the TSS of the effluent.

3.2.8.3 Bacteria Removal

E. Coli Bacteria – E. Coli bacteria levels are typically below the 126/100-ml limitation. Occasionally, higher levels have been observed. The origin of these bacterial excursions isn't known, since the residual chlorine levels were maintained for each month, but lagoon performance was not likely the reason.

3.2.8.4 Disinfection

Total Chlorine Residual - Residual chlorine levels in the effluent are typically somewhat elevated, but below the existing, permitted maximum of 1.0 mg/l. The 1.0-mg/l residual chlorine standard is high by present standards, but useful to the operator in achieving good bacterial kill when solids levels are elevated due to algae. Future permits may limit the effluent residual chlorine level to "non-detect," or virtually zero. It is very likely that de-chlorination or UV will be required as part of the next NPDES permit renewal.

3.2.8.5 Storage Capacity

The ability to store wastewater for 7-months is a prime asset of lagoons, and a capability most wastewater plants don't have. The City lagoon area of 51 acres provides approximately 16.3 million gallons of storage per foot of depth. During the 7-month no-discharge season when storage is needed, the City's dry season flows of 0.42 mgd occupy about 88 million gallons of storage – or about 5.5 feet of overall lagoon depth. As shown in Table 3.2 *Existing Treatment Facility Design Data*, Lagoons 1, 2, 3 and 4 have usable depths of 5, 3, 3 and 7 feet, respectively.

Annually, about 4.5 feet of precipitation (75 million gallons) lands in the lagoons. This does not seriously impact the sewage storage budget, because most precipitation occurs during the 5-month discharge season when flow in the river is high. During the dry, no-discharge season, rainfall is low and evaporation is significant, both of which work to the system's advantage.

3.2.8.6 Solids Management

Solids are settled from the wastewater to reside in the bottom of the lagoons. Influent Lagoon No. 1 receives most of the solids deposition, and the influent pipes and scour pads have been relocated in the past. A lagoon depth survey conducted by Public Work's staff within the last five years found sludge "islands" occurring in Lagoon No. 1 in the vicinity of influent discharge, and one other significant deposition in southwest corner of Lagoon No. 1. Lagoon Nos. 2, 3 and 4 had much less deposition than Lagoon No. 1.

When accumulated lagoon solids become excessive, contract removal of the sludge is needed if the lagoon is to be maintained and operated efficiently. Since abandoning Lagoon No.1 is not desirable, contract removal of sludge will have to be conducted in the next 10 to 20 years. Contract removal costs can be significant, and its main redeeming feature is that is conducted infrequently.

Because the sludge remains hidden below the water surface, it is easy to forget the issues of solids management until operators begin to note sludge islands and sludge covered inlet pipes. Wastewater sludge management – whether for a lagoon system or a mechanical treatment plant – represents a significant part of the system's operation and maintenance cost over time.

3.3 Existing Wastewater Treatment Needs

The existing wastewater treatment facility is capable of meeting the current needs of the city and appears to have sufficient remaining capacity to accommodate some additional growth. However, many of the process components and the associated equipment are well into the expected design life. To improve efficiency and safety a number of improvements are warranted. These are discussed in more detail in Section 5 of this report with associated cost estimates provided in Section 6.

3.4 Infiltration and Inflow (I/I) Review

I/I is an on-going concern for most communities in the Pacific Northwest. The combination of high amounts of precipitation and relatively "tight soils", produce conditions that direct significant amounts of groundwater and surface runoff into sanitary sewers. Over time, the condition of mainlines, service laterals and manholes in any collection system will continue to deteriorate allowing more I/I into the system.

The collection system for the City of Independence is relatively old and I/I has been reported and documented to be significant, particularly in older segments of the collection system. System wide improvements and subsequent reductions were made toward reducing I/I as a result of the 1998 Sewer System Improvement Project. However, peak wet weather flows resulting from I/I remain in the order of magnitude of 10 times that of average dry weather flows.

Typically, I/I consists of relatively clean water that would otherwise not require treatment. However, once it is introduced to the sanitary sewer and mixes with domestic sewage the entire waste stream must be transported, treated and disinfected before discharging into a receiving stream or waterway. A large volume of I/I is undesirable for a number of reasons:

- I/I is relatively clean water that must nevertheless be transported and treated representing unnecessary energy and chemical consumption.
- In old poorly maintained collection systems, the magnitude of I/I is frequently of a magnitude of 5 to 10 times that associated with domestic sewage. This requires that collection and treatment facilities be oversized with capacity that is unused much of the time.
- Due to its relatively dilute strength, high levels of I/I will tend upset treatment processes for mechanical treatment facilities.
- I/I is an indication that the gravity mainlines, service laterals and appurtenances are leaking. During dry weather this represents a potential source of exfiltration and groundwater contamination.
- I/I uses hydraulic capacity of gravity sewers, pump stations and treatment facilities requiring frequent and expensive upsizing and replacement of key system components. This capacity would otherwise be available to accommodate growth.
- I/I will continue to become worse as sewerage system components age. Eventually the magnitude of the flows will exceed the hydraulic capacity of the collection system resulting in overflows and spills.

- Unidentified inflow sources may include local streams and waterways. Without specifically identifying the sources of inflow, communities continue to waste money building increasingly larger facilities without understanding that it will be virtually impossible to capture, transport and treat the peak flows.

A great deal of I/I investigation and analysis was completed in preparation as part of the *1996 Sanitary Sewer Preliminary Design Report*. The 1996 report contains general strategies as well as specific recommendations for addressing I/I. The focus of the current Wastewater Master Plan is to identify elements of the citywide approach to management of wastewater and sewerage systems. For efficiency, only key recommendations identified in the 1996 Preliminary Design Report are repeated. In general it should be noted that it is in the city's best long-term financial and regulatory interests to continue to address I/I throughout the system in an organized and comprehensive manner.

3.4.1 Previous Infiltration and Inflow Analysis

The impact of I/I on the City's collection system has been the subject of considerable investigation and a number of capital improvement projects. In 1977 and 1983, studies were completed of the sanitary sewer system by C&G Engineering and Westech Engineering respectively. The C&G study resulted in the expansion of the City's wastewater treatment facility and some collection system modifications. The Westech study was focused on I/I impacts and resulted in the replacement of some mainlines in Basin B. However, the approach was not comprehensive and consequently little appreciable impact to overall I/I was realized. In particular, overflows from manholes and pump station bypasses continued to occur during most rainfall events.

In 1994, in response to a Stipulation and Final Order (SFO) from Oregon Department of Environmental Quality (DEQ), a Sanitary Sewerage Facilities Plan Update was prepared by ASCG, Inc. This report focused on a system wide analysis to identify the most cost-effective approach to eliminating collection system overflows. Review comments from DEQ staff identified additional information that they felt should be obtained and analyzed before final design was initiated. The additional information focused primarily on identifying the specific locations of inflow sources within the collection system, as well as the magnitude of inflow contribution. Recommended improvements were also to be of a more specific nature than was provided for in the Facilities Plan Update.

In response to DEQ's evaluation and request for additional specificity, the City hired David Evans and Associates, Inc. (DEA) to complete a *Sanitary Sewer Preliminary Design Report*. Work on the Preliminary Design Report began in 1994 and was completed in November 1996. The preparation and development of the Preliminary Design Report included a heavy emphasis on collecting field data during wet weather.

All previous investigative work on the Independence sewerage system indicated that the contributions of a few inflow sources far exceeded those from infiltration sources. Data analysis during the preparation of the 1996 report confirmed this assertion. Specific inflow sources identified included catch basins and roof drains in the downtown area, as well as a number of private service laterals throughout town. Infiltration appeared to be the result of widespread joint failures and similar collection system faults that would be expensive and difficult to correct.

In addition to the rise in influent levels attributed to inflow sources that collect surface runoff directly, it was noted that the influent measurements displayed a second more dramatic jump when the level of the Willamette River reached or exceeded the elevation of 141 feet. Subsequent topographic survey and field reconnaissance work identified a number of inverts in the lower sections of the Creek Interceptor and North Interceptor, which were at or below this elevation.

As a follow-up to the 1996 Preliminary Design Report, the City completed a $3.2 million Sewer System Improvement Project in 1998. The improvement project eliminated known major inflow sources including hydraulic connections to high water regions adjacent to Ash Creek and the Willamette River, replaced approximately 100 service laterals, lowered the hydraulic grade line and expanded the hydraulic capacity of several interceptors and pump stations. The project was successful at eliminating wet weather overflows and dramatically reducing overall peak system flows.

Although the Sanitary Sewer System Improvement project was very successful, the improvements targeted major system wide approaches but did not eliminate or correct all known deficiencies in the collection system. In addition to these improvements, the Preliminary Design Report identified an on-going maintenance and capital improvement program that will be required to address the system wide I/I concerns. These recommendations will be incorporated into the Capital Improvement Plan for this Wastewater Master Plan.

3.4.2 Infiltration and Inflow (I/I) Review

For the reasons noted above, many communities recognize that is more cost effective and environmentally responsible to address I/I as part of their on-going operation and maintenance programs. However, before undertaking such a program is important to understand the nature of I/I and to recognize the elements that must be present for a successful reduction program.

Components of A Successful I/I Reduction Program

Some basic rules of thumb learned from successful by correction programs are:

1. **Establish Baseline Flow Measurements**: Measure wet weather I/I flows from the selected basins before repair work starts to establish a baseline and identify the areas contributing the highest amount of I/I. Establishing a baseline flow analysis begins with keeping complete and concise daily pump run records for each pump station and daily precipitation records. The next step is to complete wet weather-nighttime flow mapping at key manholes in the area. Flow mapping is perhaps the single most valuable tool in determining where specific I/I is occurring.
2. **Address inflow and Rain Induced Inflow (RII) First**: Initial efforts should be directed at faults within the collection system, which are contributing significant amounts of I/I (usually inflow or RII sources). However, it is important to recognize that not all of the major contributors will be located and corrected during the first step. Some will not be discovered until initial repairs are made. I/I is the result of the interaction of several factors that are difficult to control. This includes the amount of precipitation, intensity of precipitation, groundwater conditions, levels of adjacent waterways, and the time interval between storms. Surcharging of sewers may prevent some I/I from entering the collection system until sufficient improvements have been made to remove the surcharge. Currently there are no known surcharging sewers within the collection system.

3. **Comprehensive Program:** If large amounts of infiltration and collection system faults are present, corrective work must be completed in a comprehensive manner within the entire sub-basin. It is a waste of money to repair only the large cracks in the main line and ignore the smaller faults, and holes and service laterals. Significant reductions in infiltration are only reliably achieved by eliminating all or nearly all of the infiltration contributing faults within a sewer basin or sub-basin. A lesser repair tends to shift the entry point of I/I from one location to the next.
4. **Budget:** Establish an on-going inspection and repair plan and budget including allowances for the identification and repair of faults not initially discovered. The repair plan must include repairs to mainlines, manholes and service laterals if each contribute significant I/I. Recognize that without an ongoing I/I maintenance and repair program, I/I will only get worse. Old main lines, manholes and service laterals will continue to deteriorate with time, creating new problems and making existing ones worse.
5. **Construction Inspection and Testing**: A vigilant inspection and testing program for new construction must be established and enforced. Requiring high quality construction materials, adequate trench preparation and backfill, and pressure testing of mainline pipes, service laterals, and manholes, will ensure that new construction does not make the City's I/I problems worse. If properly constructed, modern construction materials for sanitary sewers can produce collection systems with extremely low initial levels of I/I.

   The City has had an ongoing proactive construction inspection and testing program for approximately 10 years. Continuing this program will reduce the potential of high I/I flows.
6. **Iterative Process**: Successful I/I rehabilitation is an iterative process where the City should make the initial repairs then re-measure wet weather I/I. Unless the I/I reductions are acceptable, the remaining sources should be located and repaired. This process should be repeated until acceptable I/I reductions are achieved. Removing sources of inflow and RII usually produces the most cost-effective reduction in I/I.

3.5 Existing Flow Conditions

In analyzing and planning for sanitary sewer systems two general flow conditions must be considered: system wide flows, and flows within a basin. System wide flows include the sewage from the entire collection system that is pumped by the influent pump stations into the headworks located at the WWTF. The system wide flows are measured at the Influent Flow Meter where a circular chart recorder tracks the influent flows on a continuous basis. The chart recorder shows the various influent pump stations starting and stopping their pumps, and the increase in pumping frequency as sewage flow fluctuates through the 24-hour day, and during and after storm events.

Basin wide flows are measured at each influent pump station where the time of each pump on and pump off are recorded. Each influent pump station collects the sewage from the basin via a network of gravity sewers and lift stations. The sewage is collected at one of five major pump stations then pumped directly to the WWTF headworks. Each basin has boundaries that have been established based on geographic and topographic constraints, or residential development.

System wide flows are used to size treatment facilities. In addition, system wide flows aid in determining near term improvements to the existing WWTF improvements and identifying long term future WWTF improvements.

Basin flows are used to size gravity interceptors, pump or lift stations, and gravity collection system pipes. Basin flows aid in determining existing and future collection system deficiencies, and future collection system improvements.

This Section describes both the existing system and basin flows for the sewage collection system.

3.5.1 Historical and System Wide Flows

Sewage flows are measured daily, in terms of million gallons per day (mgd). In the dry season, the City's average daily flow is typically between 0.4 and 0.8 mgd.

Historic BOD, TSS, influent, and precipitation are summarized in Appendix E. The table in the Appendix shows that shows that, in the dry season of August, 2004, there was no rain until the end of the month and the flow was approximately 0.46 mgd. Then, on August 25, the first rain of the wet season occurred, with a total precipitation of 0.44 inches and flow to the plant increased by about 50 percent, or 0.2 mgd.

Because the magnitude of sewage flow is always changing, it is defined with respect to categories for the frequency of occurrence for the flow; e.g., average, maximum, and peak. These categories, the "flow conditions," are defined in the DEQ permit and design guidelines.

3.5.1.1 Definitions for Wastewater Flows and Parameters

There are a number of flow conditions that must be considered in the evaluation, planning and design of wastewater and sewerage systems. The Oregon Department of Environmental Quality (DEQ) has established "*Guidelines for Making Wet-Weather and Peak Flow Projection for Sewage Treatment in Western Oregon"* which is a technical guideline document. The guideline outlines specific wet-weather and peak flow conditions and recommended procedures for developing these estimated or projected flow conditions. The following paragraphs summarize the DEQ guidelines. The calculations and graphs used to complete these flow estimates are included in Appendix C of this report.

Average Dry Weather Flow (ADWF)

Average Dry Weather Flow is defined as the average of daily flows over the 6-month dry-weather period, roughly May through October. This is the flow-rate on which dry-weather mass loads are based for wastewater treatment facility design and evaluation. It can also provide a check for low hydraulic flow conditions in collection system components.

Average daily flows are measured and recorded daily in the Daily Monitoring Reports (DMR's). In preparing this report DMR's for the years 1998 through 2004 were reviewed to identify an ADWF representative of the current conditions. The City's ADWF in 2004 was 0.46 mgd.

Peak Average Daily Flow ($PADF_5$)

Peak average daily flow is the peak daily flow resulting from a 5-year 24-hour storm. DEQ guidelines recommend developing $PADF_5$ from plant records and rainfall data. The $PADF_5$ is an important consideration when designing collection system pumps and the wastewater treatment facility. For Independence the 5-year, 24-hour storm assumes 3.5 inches of precipitation and is estimated to be 4.1 mgd.

Maximum Monthly Dry Weather Flow ($MMDWF_{10}$)

The Maximum Monthly Average Dry-Weather Flow with a 10-percent probability of occurrence is designated $MMDWF_{10}$. It is assumed to be the monthly average flow in the rainiest summer month of high groundwater. West of the Oregon Cascades, the MMDWF typically occurs in May. In Independence the $MMDWF_{10}$ in 2004 was 0.68 mgd.

Maximum Monthly Wet Weather Flow ($MMWWF_5$)

This can also be thought of as the amount of flow associated with rainfall amounts that exceed 4 out of 5 totals recorded in January. This flow is used to estimate the highest monthly average attained during the winter period of high groundwater. Although heavy storms can occur during the months of November and December, the ground is often relatively dry. West of the Cascades, high groundwater is usually not attained until January. The City's $MMWWF_5$ in 2004 is estimated to be 1.79 mgd.

Wet Weather Peak Wet Hydraulic Flow ($WWPIF_5$)

PIF_5 is the peak instantaneous or peak hourly flow associated with a 5-Year PDAF. It can otherwise be described as the peak flow resulting from a 5-year storm during high groundwater periods. DEQ guidelines recommend developing the PIF_5 from plant records, or by estimation using observed diurnal peaking factors. PIF_5 is an important consideration when designing key hydraulic components in the collection system and influent handling facilities at the wastewater treatment facility. For Independence the 5-year, 24-hour storm assumes 3.5 inches of precipitation.

The PIF_5 combines domestic flows and infiltration and inflow (I/I). Similar to many communities with older collection systems, I/I can raise wet weather flows dramatically above those associated with dry months. Prior to the 1998 improvement project, portions of the gravity collection system were directly or indirectly connected hydraulically to the Ash Creek and the Willamette River flood plains and inflow was extreme during periods of high water. As a result of the system modifications and improvements completed in 1998, the known inflow sources from flood plains have been eliminated and inflow has been reduced dramatically.

A continuously recording "circle chart" has been in operation since 1998 and provides a measurement and record of the peak instantaneous flows delivered to the WWTF. However, it is important to note that the influent flow received at the WWTF is discharged from one or multiple pump stations. For this reason the peak flow measured at the Parshall flume is inherently limited by the hydraulic capacity of the pump stations pumping simultaneously. It is also important to consider the impacts of the peak instantaneous flows immediately upstream from the key pump stations. The magnitude of instantaneous flows within a basin or interceptor is more difficult to quantify since it requires estimation without the benefit of direct measurement and recording. Obtaining daily pump run records for each pump station, completing periodic draw down tests to confirm the pumping

rates, and keeping daily precipitation records will aid in predicting the peak instantaneous flows upstream of the influent pump stations. Flow mapping portions of each basin and immediately upstream of the influent pump stations provides a more accurate prediction of peak instantaneous flows, especially the influence of I/I and can be completed as part of an I/I investigation or facilities plan update.

The City's $WWPIF_5$ (PIF_5) at the lagoons is estimated to be 7.6 mgd

Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS)

BOD is a measure of wastewater strength in terms of the quantity of oxygen required for biological oxidation of the organic matter contained in the wastewater. The BOD loading imposed on a treatment facility influences both the type and degree of treatment that must be provided to produce the required effluent quality. All references to BOD in this report are to five-day BOD at 20 degrees Celsius.

TSS is a measure of the total quantity of suspended material present in the wastewater. The quantity of TSS present influences the sizing of settling units, sludge handling, and disposal processes, as well as the effectiveness of disinfection.

Per capita BOD and TSS rates were established by evaluating Daily Monitoring Report (DMR's) for the years 1999 through 2004 with indicate an average per capita loading rate of 0.12 and 0.10 lbs/day/person for BOD and TSS respectively. This rate is in the middle of the expected range for similar municipalities and it is reasonable to apply this to the projected population growth when estimating future BOD loads to the WWTF. Projected BOD loads on the primary lagoons (Nos.1 and 2) will produce a future load of 1,772 lbs/day or 62.8 lbs/day/acre which is above the 50 lbs/acre/day maximum loading rate assumed for primary lagoons in Oregon communities west of the Cascades. Operational modifications will allow the use of cell No. 3 as additional primary lagoon surface area. The overall loading rate for the entire lagoon system will be 34.7 lbs/day, which is at the 35 lbs/day limit for total treatment surface area.

3.5.1.2 Summary of System Wide Flows and Loads

Based on the analysis of the existing Daily Monitoring Reports (DMR's), DEQ Guidelines, and current and historic population records, existing system wide flow and loads were determined. Table 3.6 below, summarizes the current flow loads for the City's WWTF.

Table 3.6 Summary of Current System Wide Flows/Loading

FLOW TYPE	CURRENT (2004)		
	Units	Value	Per Capita Rate
Average Dry Weather Flow (ADWF)	mgd	0.46	66 gpcpd
Peak Daily Average Flows ($PDAF_5$)	mgd	4.10	588 gpcpd
Max. Monthly Dry Weather Flow ($MMDWF_{10}$)	mgd	0.68	98 gpcpd
Max. Monthly Wet Weather Flow ($MMWWF_5$)	mgd	1.79	257 gpcpd
Wet Weather Peak Hydraulic Flow ($WWPIF_5$)	mgd	7.60	N.A.
Total Suspended Solids (TSS)	lbs/day	698	0.10 lb/d/pc
Biochemical Oxygen Demand (BOD_5)	lbs/day	809	0.12 lb/d/pc

3.5.2 Existing Basin Flows

Flow within each individual basin is estimated to assess the ability of the corresponding influent pump station and force main to meet the existing demands, and the effectiveness of I/I remediation within the basins. The first step in estimating the basin flows is to identify the existing and proposed land use within the basin, and apply the appropriate flow and loading factors.

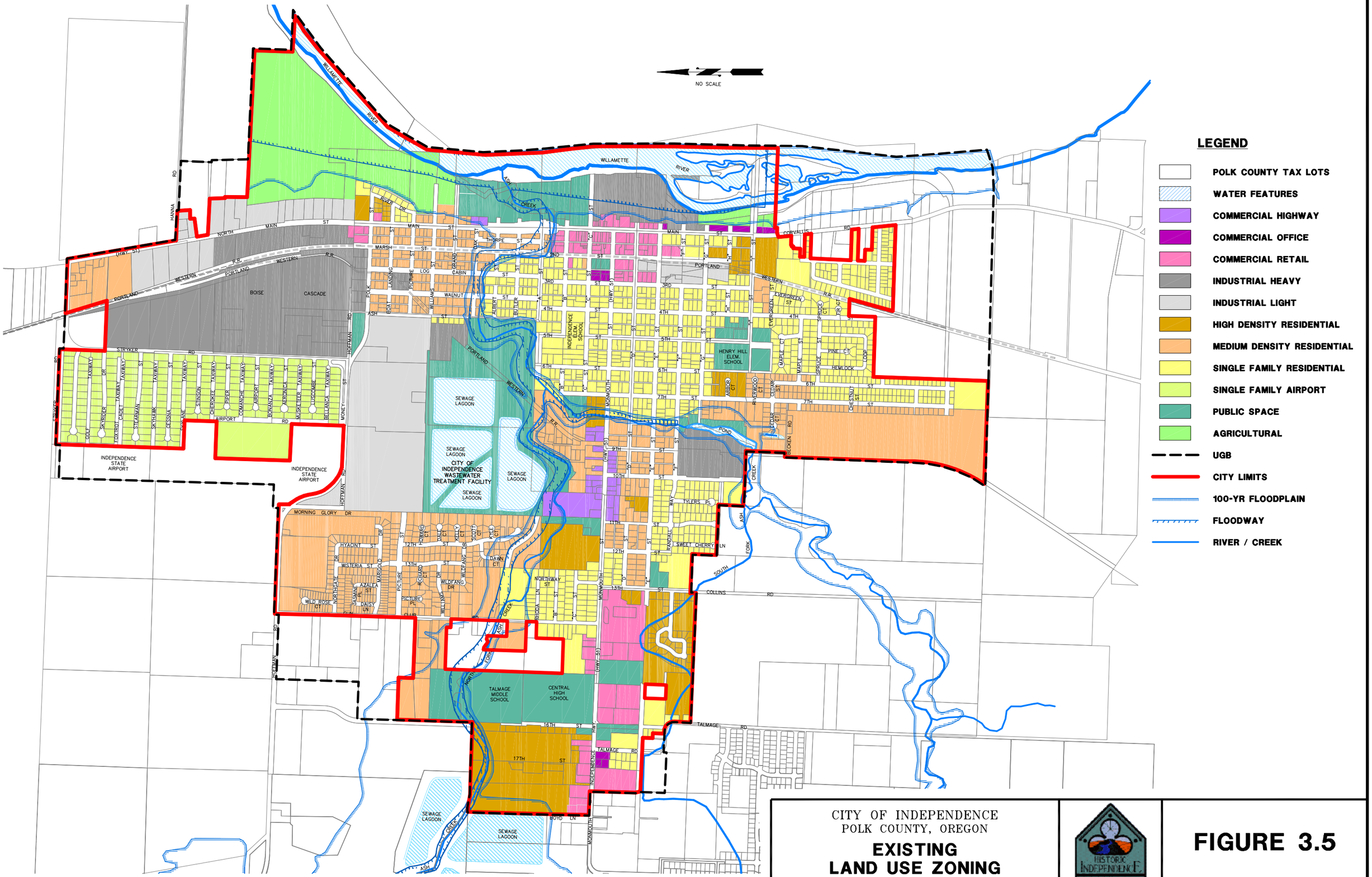
3.5.2.1 Existing Land Use Conditions

Land use within the City is diverse and includes the full spectrum of land use zoning including residential, commercial, industrial and public institutional. Table 3.7 provides a summary of land uses within the current City Limits identifying both developed and undeveloped properties. The total area within the City Limits is further broken down into areas tributary to each of the five main sewer basins. Potential expansion areas within the UBG will be discussed in more detail in Section 4 of this report.

The areas within each basin were measured directly from GIS information provided by the City of Independence and Polk County. Figure 3.5 summarizes the existing land use within the current UGB.

Table 3.7 - Existing Land Use

						Land Use Type															
Basin	Influent Pump Station	Sub Basins	Total Area	Total Developed Area	Total Un-Developed Area	(RS) Single Family Residential		(RM) Medium Density Residential		(RH) High Density Residential		(RSA) SF Airport		(CH/CO/CR) Commercial		(IH) Industrial Heavy		(IL) Industrial Light		(PS) Public Service	R/W and Other Non Developable
			(AC)	(AC)	(AC)	Dev.	UnDev.	Dev.	UnDev.	All Dev.	UnDev.	Dev.	UnDev.	Dev.	UnDev.	Dev.	UnDev.	Dev.	UnDev.	All Dev.	N/A
A	**Oak St.**	A	223.5	223.5	0.0	4.1	0.0	44.0	0.0	3.0	0.0	0.0	0.0	2.5	0.0	68.9	0.0	31.6	0.0	9.8	59.6
B	**Riverview**	B1	98.1	98.1	0.0	45.5	0.0	15.7	0.0	4.7	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	11.9	19.2
		B2A	115.6	115.6	0.0	51.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	14.1	0.0	4.7	0.0	5.2	0.0	3.6	36.8
		B2B	106.7	106.7	0.0	57.8	0.0	2.1	0.0	0.0	0.0	0.0	0.0	1.7	0.0	3.0	0.0	1.7	0.0	3.3	37.1
		Total	320.4	320.4	0	*154.3*	*0.0*	*18.0*	*0.0*	*4.7*	*0.0*	*0.0*	*0.0*	*16.9*	*0.0*	*7.7*	*0.0*	*6.9*	*0.0*	*18.8*	*93.1*
C	**9th St.**	C1	206	169.1	36.9	33.7	12.6	37.5	2.4	26.5	11.1	0.0	0.0	30.7	5.6	8.5	5.2	0.0	0.0	10.5	21.7
		C2	81.5	28.2	53.3	11.2	4.5	6.5	48.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	7.9
		Total	287.5	197.3	90.2	*44.9*	*17.1*	*44.0*	*51.2*	*26.5*	*11.1*	*0.0*	*0.0*	*30.7*	*5.6*	*8.5*	*5.2*	*0.0*	*0.0*	*13.1*	*29.6*
D	**Lagoon**	D1	118.4	104.8	13.6	9.3	0.0	3.8	0.0	24.4	13.6	0.0	0.0	14.8	0.0	0.0	0.0	0.0	0.0	33.5	19.0
		D2	136.7	108.7	28.0	0.0	0.0	76.1	28.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.6
		Total	255.1	213.5	41.6	*9.3*	*0.0*	*79.9*	*28.0*	*24.4*	*13.6*	*0.0*	*0.0*	*14.8*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*33.5*	*51.6*
E	**Williams**	E	225.6	129.4	96.2	0.0	0.0	0.0	0.0	0.0	0.0	66.0	17.6	0.0	0.0	8.3	24.2	16.1	54.4	0.0	39.0
		Grand Total	**1312.1**	**1084.1**	**228**	**212.6**	**17.1**	**185.9**	**79.2**	**58.6**	**24.7**	**66.0**	**17.6**	**64.9**	**5.6**	**93.4**	**29.4**	**54.6**	**54.4**	**75.2**	**272.9**



CITY OF INDEPENDENCE
POLK COUNTY, OREGON

EXISTING LAND USE ZONING

FIGURE 3.5

3.5.2.2 Summary of Existing Basin Flows

Densities for each land use designation were estimated as part of the basin flow analysis. The estimated flows are based on land use, acreage, and existing per capita assumptions. Although this is not a precise analysis, applying the underlying land use zoning for areas contained in the basins provides a rational approach that takes into account the typical flow and loadings associated with these types of developments. Table 3.8 below summarizes the parameters used in estimating each basin flow.

Table 3.8 Parameters for Existing Basin Flow Estimates

Design Criteria	Existing Criteria
Number of Dwelling Units (DU) Per RS Acre	5
Number of Dwelling Unit per RM Acre	6
Number of Dwelling Unit per RH Acre	16
Number of Dwelling Unit per RSA Acre	2.5
Persons Per RS and RM Dwelling Unit	2.9
Persons per RH Dwelling Unit	2.5
Persons per RSA Dwelling Unit	2.0
Commercial Flow (gpad)	1000
Industrial Flow (gpapd)	1000
Gallons per Capita per Day (gpcpd)	75
Infiltration and Inflow (I/I) (gpad)	1000
Peaking Factor	3.0

Based on the above parameters the existing flow and peak flow for each basin was estimated and summarized in Table 3.9 below. A detailed table showing the land use type, acreage, and estimates is provided in Appendix F of this report.

Table 3.9 Summary of Existing Basin Flows

Basin	Influent Pump Station	Total Existing Flow	Total Existing Peak Flow	
		(gpd)	(mgd)	(gpm)
A	Oak Street	397,379	0.75	517
B	Riverview	557,291	1.03	716
C	9Th Street	422,249	0.87	606
D	Lagoon	415,883	0.82	570
E	Williams St.	178,550	0.28	192
	Totals	**1,971,352**	**3.75**	**2,601**

3.5.3 Existing Collection System and Interceptor Capacities

The existing flow estimates for each basin were compared with each existing interceptor and pump station capacity. The interceptor capacity was determined from existing record information provided by the City. Table 3.10 below summarizes the existing interceptor and pump station capacities.

Table 3.10 Existing Interceptor and Pump Station Capacity

Basin	Influent Pump Station	Interceptor Name	Manhole Location	Interceptor Capacity (mgd)	Existing Peak Flow (mgd)	Qp/ Qc	Existing Pump Station Flow (mgd)	Existing Pump Station Flow (gpm)
A	Oak St.	North	N6	1.26	0.75	0.60	1.06	740
B	Riverview	Confluence	M1	6.1	1.03	0.17	3.00	2080
		Middle	M2	0.72	0.35	0.49		
		South	S4	2.08	0.68	0.33		
C	9th St.	Confluence	M14A	4.80	0.87	0.18	1.30	900
		Monmouth	M14B	2.64	0.76	0.29		
		8th Street	M13-4	1.06	0.11	0.10	0.82[1] 1.00[2]	568 700
D	Lagoon	West	W5	1.32	0.82	0.62	2.17	1509
E	Williams	Airpark	A2	0.56	0.28	0.50	0.36	246

[1] Mt. Fir Pump Station 1 pump running
[2] Mt. Fir Pump Station 2 pumps running (room for 3 pumps)

Projected growth will require improvements and/or replacement of many of the key facilities and will be discussed in more detail in Chapter 4 of this master plan. Alternatives for addressing projected capacity shortfalls will also be identified and developed in more detail as part of Chapters 4 and 5.

Figure 3.6 includes the existing and projected flows and capacities of the pump station and interceptors. The projected flow analysis is described in detail in Section 4 and is included in this figure for clarity.

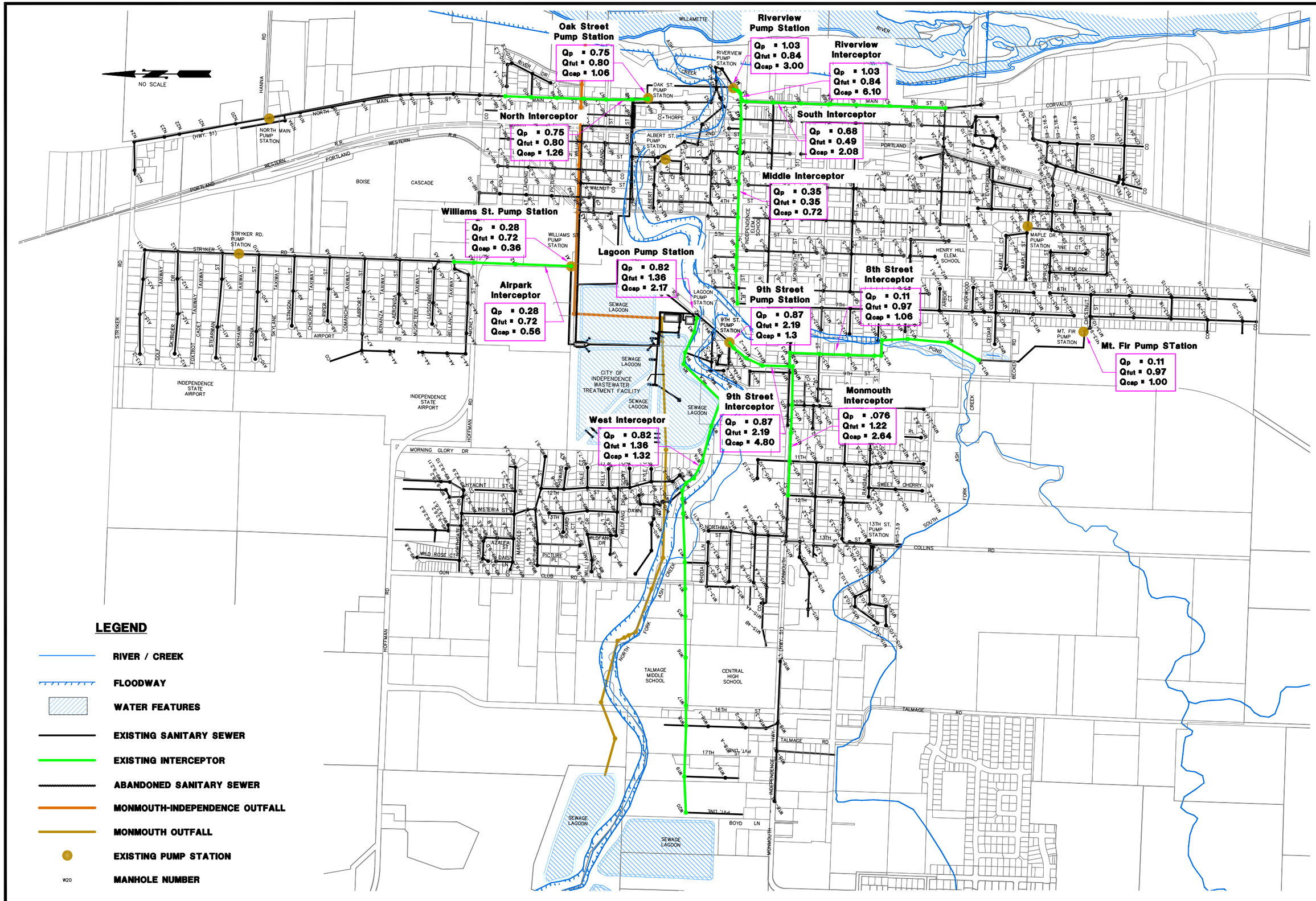


FIGURE 3.6

CITY OF INDEPENDENCE
POLK COUNTY, OREGON

EXISTING SANITARY COLLECTION SYSTEM & PUMP STATION CAPACITIES

4 FUTURE CONDITIONS

When projecting flows within the sewerage system, it is important to complete this at two levels. First is the projection of total system wide flows and loads to the WWTF, and second is projecting flows to specific basins and components within the collection system. This requires consideration of the historic and projected population growth, and the specific land uses allowed and anticipated for land within the city limits and Urban Growth Boundary (UGB).

4.1 Population Growth and Land Use

Table 4.1 summarizes the population history for the City between the years 1930 and 2004. Independence has experienced periods of rapid and relatively flat growth. Growth from 1980 through 1990 was relatively slow including years with almost no population increase. This corresponded with the decline of timber industry and the discontinuation of several local industrial operations. Shortly after the 1994 Facilities Plan Update, the City began to experience a dramatic increase in population growth including several residential developments. Between 1995 and 2004, the total population increased by 2,295 persons which represented a population increase of 47-percent. Annualized this represents an average yearly population increase of 4.4-percent.

On July 1, 2004 the population of Independence was certified as 7,170 persons by the Portland State University Population Research Center. During the preparation of this wastewater master plan, City staff identified 3.5-percent as an appropriate growth rate for projecting future city wide population growth. The projected citywide population will be used in conjunction with historic performance and standard industry design parameters to project flows and loads to the WWTF.

4.1.1 Historic and Projected Population Growth

Table 4.1 Historic and Projected Population

Year	Population	Year	Population
1930	1250	**1985**	4225
1935	1325	**1990**	4425
1940	1400	**1995**	4875
1945	1700	**2000**	6035
1950	2000	**2003**	6850
1955	2000	**2004**	7170
1960	2000	**2005**	7421
1965	2250	**2010**	8814
1970	2500	**2015**	10468
1975	3262	**2020**	12433
1980	4024	**2025**	14766

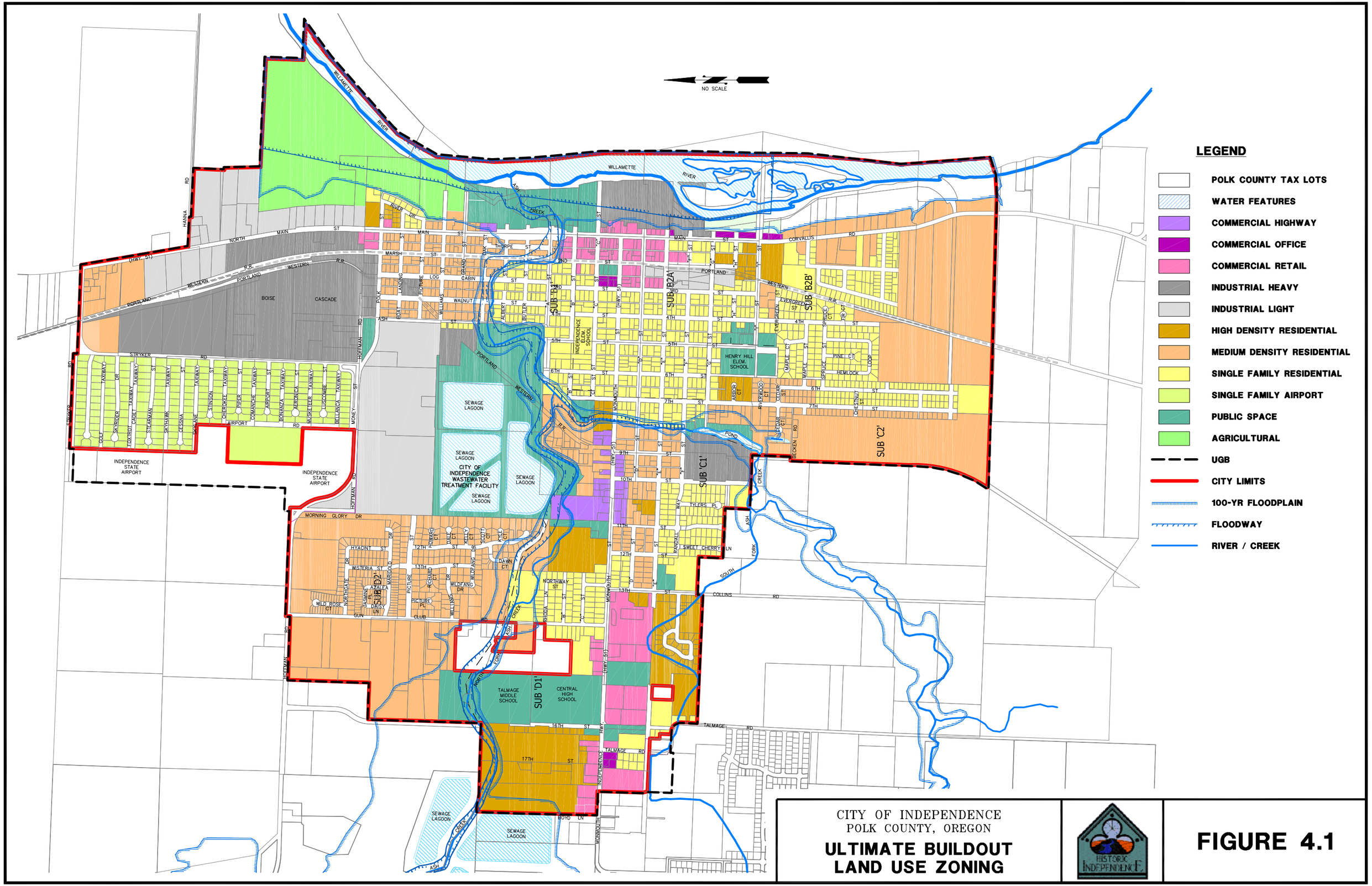
4.1.2 Future Land Use Conditions

The potential change or continuation of land use outside of the existing City Limits and within the existing Urban Growth Boundary (UGB) has not been established at this time. Establishing future zoning was determined primarily by extending or continuation of the existing land use within the UBG limits.

The areas within each basin were measured directly from GIS information provided by the City of Independence and Polk County. Table 4.2, summarizes the land use areas within the UBG. Land use zoning designations for properties within the UGB are shown in Figure 4.1.

Table 4.2 - Land Use at Ultimate Buildout - Urban Growth Boundary

						Land Use Type															
Basin	Influent Pump Station	Sub Basins	Total Area	Total Developed Area	Total Un-Developed Area	(RS) Single Family Residential		(RM) Medium Density Residential		(RH) High Density Residential		(RSA) SF Airport		(CH/CO/CR) Commercial		(IH) Industrial Heavy		(IL) Industrial Light		(PS) Public Service	R/W and Other Non Developable
			(AC)	(AC)	(AC)	Dev.	UnDev.	Dev.	UnDev.	All Dev.	UnDev.	Dev.	UnDev.	Dev.	UnDev.	Dev.	UnDev.	Dev.	UnDev.	All Dev.	N/A
A	Oak Street	A	238.6	223.5	15.1	4.1	0.0	44.0	0.0	3.0	0.0	0.0	0.0	2.5	0.0	68.9	0.0	31.6	15.1	9.8	59.6
B	Riverview	B1	98.1	98.1	0.0	45.5	0.0	15.7	0.0	4.7	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	11.9	19.2
		B2A	115.6	115.6	0.0	51.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	14.1	0.0	4.7	0.0	5.2	0.0	3.6	36.8
		B2B	62.3	62.3	0.0	14.2	0.0	2.1	0.0	0.0	0.0	0.0	0.0	1.7	0.0	3.0	0.0	1.7	0.0	3.3	36.3
		Total	276	276	0.0	*110.7*	*0*	*18.0*	*0.0*	*4.7*	*0.0*	*0.0*	*0.0*	*16.9*	*0.0*	*7.7*	*0.0*	*6.9*	*0.0*	*18.8*	*92.3*
C	9th Street	C1	212.8	170.6	42.2	33.7	12.6	37.5	7.7	26.5	11.1	0.0	0.0	30.7	5.6	8.5	5.2	0.0	0.0	10.5	23.2
		C2	287.2	125.6	161.6	106.2	11.2	6.5	150.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	10.3
		Total	500	296.2	203.8	*139.9*	*23.8*	*44.0*	*158.1*	*26.5*	*11.1*	*0.0*	*0.0*	*30.7*	*5.6*	*8.5*	*5.2*	*0.0*	*0.0*	*13.1*	*33.5*
D	Lagoon	D1	118.4	104.8	13.6	9.3	0.0	3.8	0.0	24.4	13.6	0.0	0.0	14.8	0.0	0.0	0.0	0.0	0.0	33.5	19.0
		D2	188.2	113.2	75.0	0.0	0.0	76.1	75.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.1
		Total	306.6	218.0	88.6	*9.3*	*0.0*	*79.9*	*75.0*	*24.4*	*13.6*	*0.0*	*0.0*	*14.8*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*33.5*	*56.1*
E	Williams Street	E1	235.4	124.9	110.5	0.0	0.0	0.0	5.5	0.0	0.0	66.0	17.6	0.0	0.0	8.3	33.0	16.1	54.4	0.0	34.5
		Total	**1516.6**	**1138.6**	**418**	**264.0**	**23.8**	**185.9**	**238.6**	**58.6**	**24.7**	**66.0**	**17.6**	**64.9**	**5.6**	**93.4**	**38.2**	**54.6**	**69.5**	**75.2**	**276.0**



CITY OF INDEPENDENCE
POLK COUNTY, OREGON

ULTIMATE BUILDOUT LAND USE ZONING

FIGURE 4.1

4.1.3 Projected System Wide Flows and Loading

In projecting flows and loads delivered to the WWTF, the historic data related to these two design parameters were considered in combination with the projected population growth for the City as a whole. By analyzing the existing flows and treatment plant loadings, per capita unit parameters for flows and loadings can be established and applied to the projected population growth. Table 4.3 lists the parameters utilized for projecting flows and loads system-wide.

An important underlying assumption used in these projections is that the population, commercial services, and industries, which currently live in and serve Independence, will increase proportionally and be of a similar nature in terms the their associated flows and waste strength. If this is not true, and new industries or commercial enterprises with heavy flows and loads develop, these developments will need to be evaluated on a case by case basis to determine if pre-treatment or other methods are appropriate. Table 4.3 lists the flows and pollutant load factors for system projections.

Table 4.3 Flows and Pollutant Load Factors

Per Capita Domestic Sewage	75gpcpd
Infiltration Contribution from New Construction	1000gpd/acre
Diurnal Peaking Factor	3.0
Existing Inflow Correlation	1.8 mgd/inch of Precipitation
Per Capita BOD Loading	0.12 lbs/day/capita
Per Capita TSS Loading	0.10 lbs/day/capita
Design Storm, 5-Year Recurrence	3.5 inches/day
Average Daily Infiltration	0.10 mgd

Based on the parameters listed in Table 4.3 and the population projections listed in Table 4.1 projected flow and loading values were completed. Table 4.4 summarizes the existing and projected value. The DEQ methodology for predicting future peak flows, upon which the design facilities are based upon, is contained in Appendix C.

Table 4.4 Summary of Current and Projected System Wide Flows/Loading

Flow Type	Units	2004 Value	2025 Value
Influent Flow			
Average Dry Weather Flow (ADWF)	mgd	0.46	1.04
Peak Instantaneous Wet Weather Flow ($WWPIF_5$)	mgd	7.6	9.9
Influent Load			
Total Suspended Solids (TSS)	lb/day	698	1,478
Biochemical Oxygen Demand (BOD5)	lb/day	809	1,772
Total Lagoon Loading Rate (Cells 1, 2, 3 & 4)	lb BOD/acre/day	15.9	34.7
Primary Lagoon Loading Rate (Cells 1 & 2)	lb BOD/acre/day	28.7	62.8

4.2 Projected Basin Flows

4.2.1 Projected Basin Flows

While historic projections are good for projecting growth on a City-wide basis, it is not feasible to assume that all of the currently undeveloped land within the City limits will be fully developed within the 20-year study period. Population growth will likely be concentrated in specific basins and most of the areas scheduled for development will be only partially developed to their full density. However, when sizing new pump stations and interceptor sewers, it does not make sense to construct them to accommodate only the partial development within the study period. Rather, these key facilities must be sized to accommodate the ultimate build-out through either full constructed capacity or phasing, even though full development may occur outside of the 20-year study period. For this reason, the flow projections for each future basin were completed using parameters listed in Table 4.5 below.

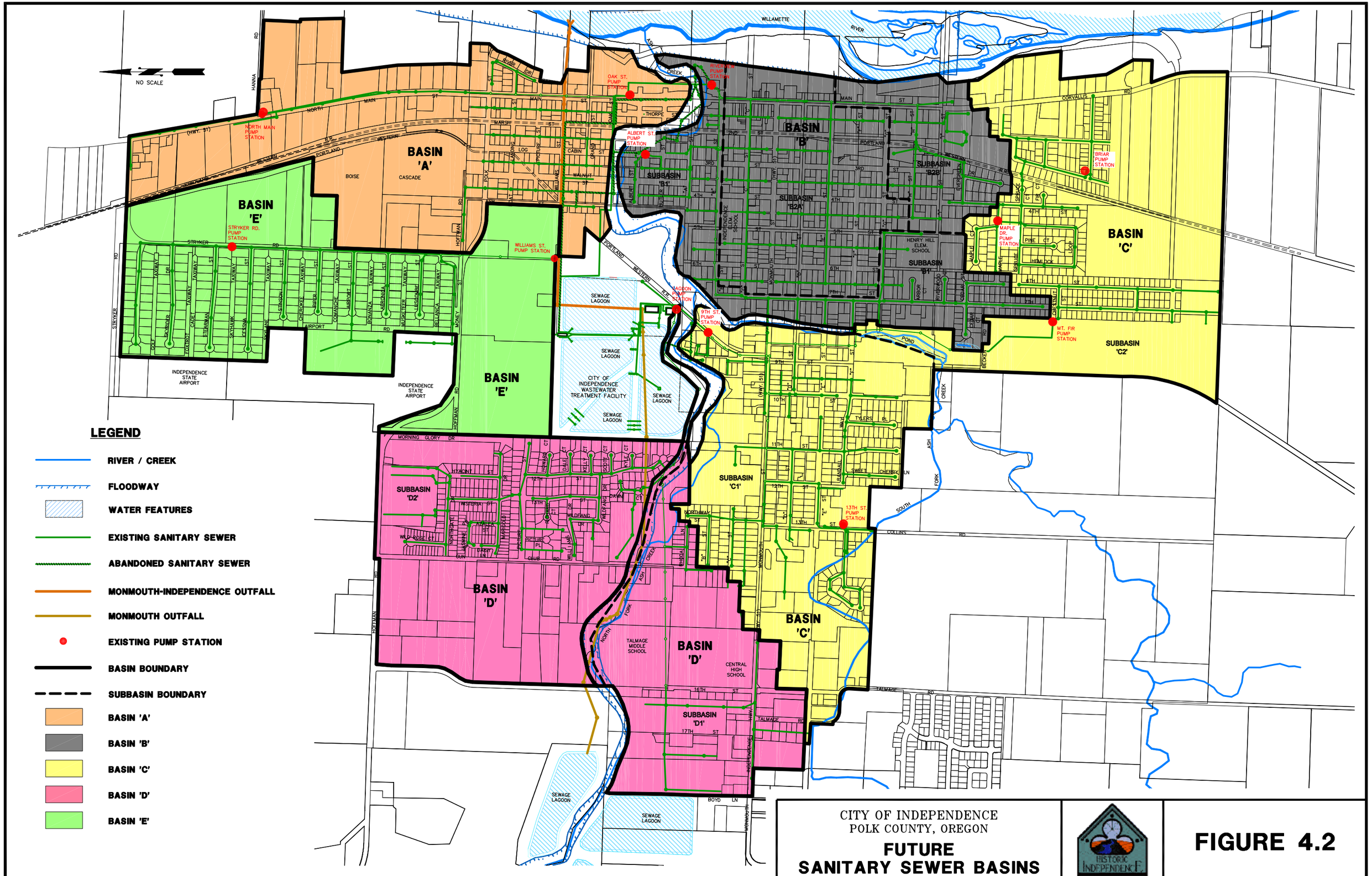
Table 4.5 Parameters for Projected Ultimate Flows Within Basins

Description	Design Criteria
Number of Dwelling Units (DU) Per RS Acre	6
Number of Dwelling Unit per RM Acre	6
Number of Dwelling Unit per RH Acre	20
Number of Dwelling Unit per RSA Acre	2.5
Persons Per RS and RM Dwelling Unit	2.9
Persons per RH Dwelling Unit	2.5
Persons per RSA Dwelling Unit	2.0
Commercial Flow (gpad)	1000
Industrial Flow (gpad)	1000
Gallons per Capita per Day (gpcpd)	75
Infiltration and Inflow (I/I) (gpad)	1000
Peaking Factor	3.0

The land within each basin that is currently undeveloped has been summarized in Table 4.2. Unit flow and development density design parameters summarized in Table 4.5 are applied to these undeveloped areas to estimate projected flow increases. The increased flow is combined with existing flow estimates to produce the projected total flow for each basin at buildout. This information is summarized in Table 4.6 below. The configuration and limits of the proposed future basins are outlined in Figure 4.2. A detailed table showing the land use type, acreage, and estimates is provided in Appendix F of this report.

Table 4.6 Future Basin Flow Projections

Basin	Influent Pump Station	Future Base Flow	Future Peak Flow	
		(mgd)	(mgd)	(gpm)
A	Oak Street	0.428	0.80	556
B	Riverview	0.465	0.84	583
C	9Th Street	1.06	2.19	1,520
D	Lagoon	0.658	1.36	944
E	Williams Street	0.396	0.72	500



CITY OF INDEPENDENCE
POLK COUNTY, OREGON

FUTURE SANITARY SEWER BASINS

FIGURE 4.2

4.3 Future Collection System Needs

Based on the projected basin flows, existing facilities, and potential future developmental patterns for the collection system were identified. Table 4.7 summarizes the projected peak flows and the capacities of the pump station and interceptors and was used to aid in determining the future collection system needs. The following sections describe the future collection system needs in greater detail. Detailed estimated budgetary costs and funding methods for these improvements are described and discussed in Sections 6 and 7. The location of the future collection system needs are shown in Figure 4.3 at the end of this section.

Table 4.7 Interceptor and Pump Station Capacity and Projected Basin Flows

Basin	Influent Pump Station	Interceptor Name	Manhole Location	Interceptor Capacity	Ultimate Buildout Peak Flow	Interceptor Qp/Qc	Existing Pump Station Flow	
				(mgd)	(mgd)		(mgd)	(gpm)
A	Oak St.	North	N6	1.26	0.80	0.63	1.06	740
			N11	1.39[3]	0.58		0.36[4]	250
B	Riverview	Confluence	M1	6.1	0.84	0.14	3.00	2080
		Middle	M2	0.72	0.35	0.39		
		South	S4	2.08	0.49	0.27		
C	9th St.	Confluence	M14A	4.80	2.19	0.46	1.30	900
		Monmouth	M14B	2.64	1.22	0.46		
		8th Street	M13-4	1.06	0.97	.92	0.82[1]	568
							1.00[2]	700
D	Lagoon	West	W5	1.32	1.36	1.03	2.17	1509
E	Williams	Airpark	A2	0.56	0.72	1.29	0.36	246

[1] Mt. Fir Pump Station 1 pump running
[2] Mt. Fir Pump Station 2 pumps running (room for 3 pumps)
[3] Sanitary Sewer Improvements: OR 51 Stryker Road to Polk Street
[4] New North Main Pump Station

4.3.1 Gravity Sewer and Interceptor Improvements

Analysis of current sewer system capacities and future requirements requires consideration of existing development, potential redevelopment, and undeveloped properties. Although redevelopment is likely for many parcels, it is also likely that redevelopment and new development will be of a similar nature and characteristics as the current land uses in terms of flows and loadings.

4.3.1.1 Basin A/North Interceptor

Approximately 15.1 acres of industrial land within Basin A is undeveloped. At buildout, the peak flows entering this interceptor from the industrial properties north of Polk Street (manhole N11), are projected to be 0.58 mgd. This exceeds the calculated hydraulic capacity of much of the existing 8-inch interceptor (0.49 mgd). To accommodate the projected flow increase, replacement of the existing 8-inch pipe with a larger diameter pipe from manhole N8 to N24, will be required. In the summer of 2006, as part of the Hwy OR 51: Stryker Road to Polk Street project, the City plans to replace the sanitary sewer from MHN11 to MHN24, and North Main Pump station. The replacement sewer will be sized to accommodate projected flows at ultimate buildout. The remaining segments of the North Interceptor, from MH N8 to N11, will need to be replaced as part of a future project.

4.3.1.2 Basin B/South Interceptor

Approximately 9.6 acres of residential land is available for new development within Basin B. Beyond this residential land, there is very little undeveloped property contained within the basins tributary to the South Interceptor. Additionally, the known hydraulic bottlenecks identified in earlier studies have been eliminated. No critical capital improvements have been identified as part of this master plan.

4.3.1.3 Basin C/Middle Interceptor

A large amount of land within Basin C is available for future development. Much of this is residential property located in the south end of the basin which will impact several sections of the downstream mainline. Improvements were made to the Middle Interceptor as part of the 1996 Sewer Improvement Project, and as part of the Mt. Fir Residential development. If development occurs as currently identified, sufficient hydraulic capacity is available in the Middle Interceptor.

4.3.1.4 Basin D/West Interceptor

Approximately 89 acres of land is available for new development within Basin D. Records of pipe sizes and slopes are available for the lower 1600 feet of pipe in the vicinity of the lagoons. However, upstream from MH W7 record drawings are not available to confirm the as-built geometry. If constructed in compliance with industry standards, there appears to be sufficient capacity to accommodate current and future development. However, this pipe is relatively old and the structural condition could not be confirmed. Given the fact that this is a key interceptor serving Basin D and in close proximity to Ash Creek, and projected flows will reach the hydraulic capacity, replacement is recommended as part of the proposed capital improvement plan.

4.3.1.5 Basin E/Airport Interceptor

A large amount of land within Basin E is available for future development. The downstream segments of the interceptor are hydraulically inadequate to accommodate projected future development and will require replacement. The current peak flows are estimated to be 0.46 mgd with the limiting hydraulic segment (MH A-2 to MH A-3) having a full flow capacity of 0.56 mgd. An estimated 3,510 feet of mainline, MH A-1 to MH A-8, will require replacement with larger and diameter pipe.

4.3.2 Pump Station and Lift Station Improvements

As a result of a focused capital improvement effort since 1998, most of pump stations within the collection system have been improved to accommodate the projected ultimate peak flows. The exceptions are the Williams Street and 9th Street pump stations. Williams Street is able to serve the current flows that are relatively small. However, projected future development at build-out will exceed the current capacity. An additional concern is that the station equipment is nearing the end of a reasonable design and service life and replacement of at least major equipment, will be required regardless of future development.

The 9th Street pump station was constructed as part of the City's 1998 Sewer Improvement project. The pump station's wet well and appurtenances were sized to accommodate the peak flows at ultimate build-out for the basin. However, due to the wide range between current flow demands and ultimate build-out, the pumps installed were sized to accommodate projected flows through 2018. This basin has the potential to experience dramatic flow increases and growth, and associated hydraulic impacts to the pump station should be monitored. When peak flows begin to approach the firm pumping capacity (a single pump operating) at the 9th Street Pump Station, the pumps and motor controls should be upgraded. The existing pumps for Oak Street and 9th Street are the same motor size and impeller configuration. When the 9th Street Pump Station pumps are replaced, the existing pumps can then be stored for use as back-up pumps for the Oak Street pump station.

The Williams Street Pump Station was construction in 1979 and is nearing the end of its useful life. As development occurs within Basin E, the firm pumping capacity will not meet the peak flows. Prior to the firm pumping capacity being met, the City should replace this pump station. The replacement will include lowering the pump station and constructing a wetwell, valve vault, appurtenances, and force main to the WWTP headworks.

Other pump station improvements include:

- Maple Street pump station and Briar Street pump station will be replaced with a gravity sewer and new pump station when development at the southern portion of the Mt. Fir subdivision is completed.

- The North Main Pump station is nearing the end of its useful life and subsequently will be moved and replaced as part of the City's OR 51 improvement project.

4.3.3 Collection System Infiltration and Inflow Improvements

As described in detail in Section 3.4 the general approach required for a successful I/I reduction program consists of (1) Establishing a baseline of Flow Measurements, (2) Addressing inflow and RII first, (3) Conducting a comprehensive program, (4) Establishment of a repair budget, (5) Conducting construction inspection and testing, and (5) Establishing an iterative process that monitors success and failures and adjusts future projects accordingly.

The City has taken several proactive steps toward implementing this approach since the city wide improvements project in 1998. In addition to a number of capital improvement projects, the City has implemented a proactive inspection and testing program to monitor new construction within the City jurisdiction. In addition, the City has conducted smoke testing and television inspection, and has budgeted for the replacement of aging sewers. It is recommended that this program continue and includes all items described in Section 3.4

The City should also anticipate and budget for the replacement of the private sewer laterals as part of mainline is replacement projects. One of the largest contributors of I/I flows is from service laterals. Comprehensive basin or sub-basin replacement including service laterals provides the most efficient and cost effective use of funds for reducing I/I.

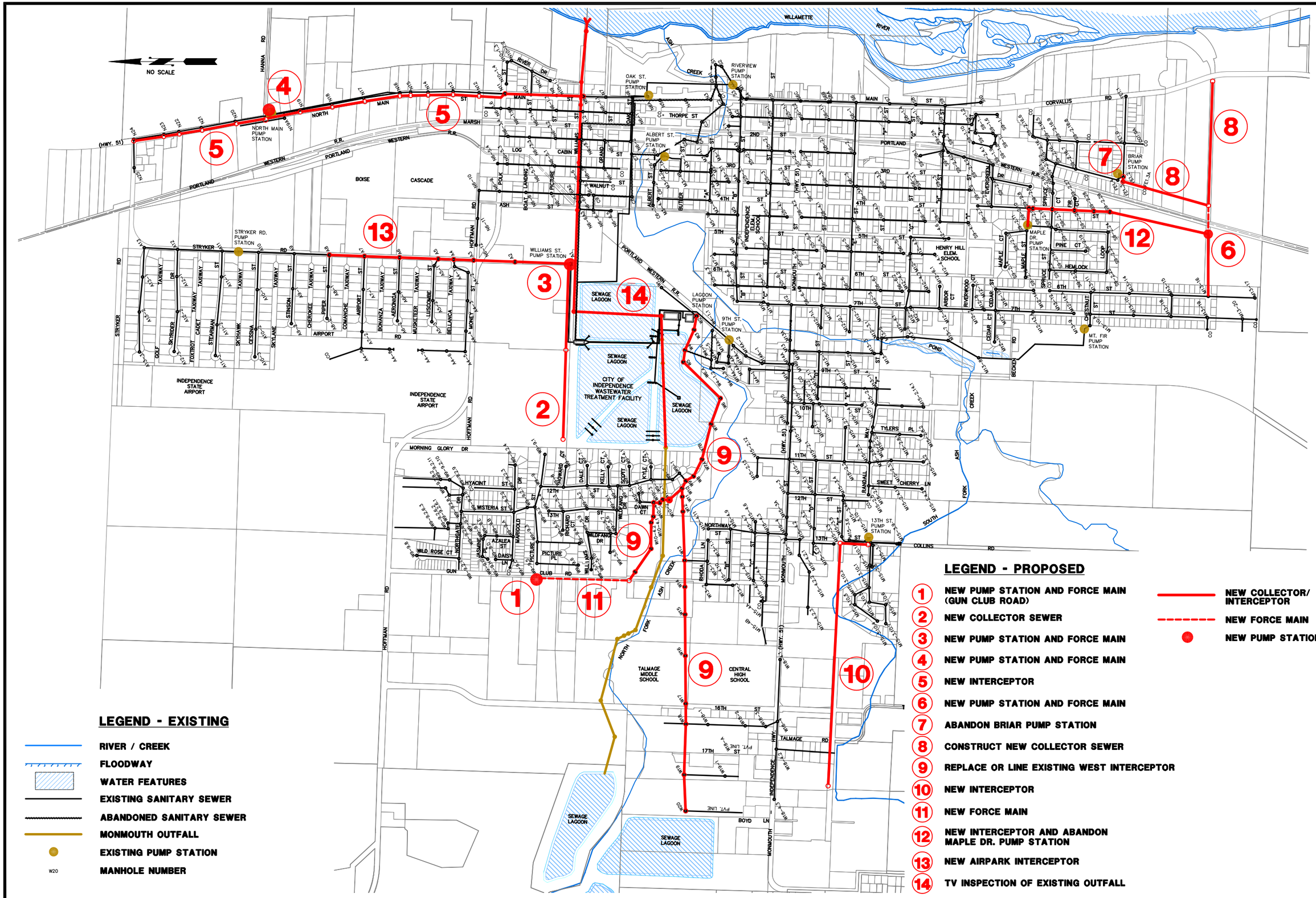


FIGURE 4.3

CITY OF INDEPENDENCE
POLK COUNTY, OREGON

FUTURE SANITARY SEWER COLLECTION NEEDS

5 WASTEWATER TREATMENT SYSTEM ALTERNATIVES

This section describes the City's wastewater treatment system alternatives. The first step in identifying, developing and analyzing options for the City's future wastewater management is to identify objectives. These objectives are summarized in Section 5.1 below.

Alternative No. 1 focuses on enhancing the lagoon treatment, with treated effluent discharged to the Willamette River and through spray irrigation. Alternative No. 2 develops a mechanical treatment plant. Near term improvements that are common to both the wastewater treatment alternatives have also been identified. These near term improvements are summarized in Section 5.2. A comparison of the costs associated with near term improvements and treatment alternatives is provided in Section 6.

During the preparation of this master plan, DEQ representatives were consulted to assist with identifying potential and likely future permit requirements. DEQ traditionally does not provide formal review and comments for wastewater master plans. As such, DEQ staff was not able to offer specific permit changes or anticipated additional requirements. However, they did offer some comments on current permit requirements in the context of current permit interpretations for similar community sewerage systems.

5.1 Objectives

Wastewater treatment alternatives must be based on the system's needs, but it is not sufficient to just select the least expensive alternative that will meet the permit requirements. A number of other City objectives must be also met including:

Accommodate growth – Provide capacity for growth over the next 20 years.

Meet DEQ requirements – For lagoon based treatment this currently includes; meet 85% BOD removal and 65% TSS removal requirements. Treat flows up to those resulting from a 5-year storm. Store effluent 5 months out of the year. Have the ability to upgrade to remove nitrogen and/or other pollutants if required in the future.

Build affordable improvements – Construct the most cost-effective system which does the job. This will likely utilize the existing wastewater facility (lagoons) to the greatest extent possible.

Apply Appropriate Technology - Provide automated, operator-friendly, simple features that balance the use of new and innovative technologies without becoming an additional burden to the City staff.

Improve Willamette River Water Quality – Discharge progressively fewer pounds per day of pollutants to the river.

Enhance open space and wildlife habitat – Where possible and for little or no additional cost, provide open space, wildlife habitat and public access.

Conserve water – Where economically feasible recycle treated wastewater effluent.

Conserve energy – Design facilities which minimize energy use for treatment processes including nitrification, denitrification, disinfection and pumping.

Serve as a Good Neighbor – Provide facilities which are compatible with adjacent properties and uses, including the residential area west of Lagoon Nos. 3 and 4, and public use areas and open space along Ash Creek.

Improve Public and Operator Safety – Protect facilities against unauthorized entry, water contact, and other illegal or unsafe activities by members of the public. Enhance operator safety.

5.2 Near Term Improvements - Common Features of Alternatives

Each of the two treatment alternatives described in this master plan could be developed and constructed as part of a single large scale capital improvement project, or over time, in two or three phases. The near-term improvements, necessary to optimize the existing plant, are common to both alternatives and should be built regardless of which alternative is selected.

Section 3 identified the various needs of the existing treatment facility. The following paragraphs summarize recommended Near Term Improvements. The general configuration and relationship of these improvements are shown in Figure 5.1 Near Term Improvements, with cost estimates provided in Chapter 6.

Influent Screen – A screen is needed to remove inert, non-digestible solids from the flow stream and minimize sludge accumulation in Lagoon Nos. 1 and 2.

Grit Removal Unit – Grit removal is also needed to minimize solids accumulation in Lagoon No.1 and improve operator health and safety. Grit contains sand, glass, syringes, and other potentially dangerous items.

Riprap Dikes – Approximately 1,500 feet of additional riprap is required to protect the lagoon banks and minimize algae matting.

Lagoon Outflow/Algae Control System – Provide outlet improvements at Lagoon No. 4 to inhibit drawing algae into the effluent stream. This will likely involve development and construction of a more efficient, flexible, and precise decanting system.

Lagoon Irrigation Pump Set – Provide an additional pump, reel and irrigation set at the lagoons, as requested by the operators to supplement the existing lagoon irrigation set.

Chlorine Safety Improvements – Provide the chlorine safety improvements including replacement of the existing system with a calcium hypochlorite, onsite chlorine, or ultraviolet disinfection system.

Flow Paced Chlorine Addition – Replace one of the existing chlorinators with a flow-paced chlorinator which adjusts the chlorine dose as the effluent flow varies.

Assess the Existing Effluent Line and Willamette River Outfall – The entire alignment with particular focus on key components of the effluent sewer and outfall should be TV inspected to

assess the condition and remaining service life. The dispersion and dilution of the existing combined outfall into the river should be modeled using an updated CORMIX computer model to assess whether or not an outfall diffuser and/or whether de-chlorination is desirable and necessary.

Telemetry – Because the lagoons do not have a control building, the WWTF process information is stored and processed at the Public Works office. City staff has stated that arrangements are being made to upgrade and house the telemetry system for the sanitary sewer system in a control room at the City Shops. Remote monitoring and operation of the system will be improved by providing the following signals to the office:

- All Pump Stations: Pump On/Off (with the ability to record and archive daily pump run hours/flow without deleting records).
- All Pump Stations: High Level and Pump Fail Alarms
- Influent Flow
- Lagoon 1 Depth and Volume
- Lagoon 2 Depth and Volume
- Lagoon 3 Depth and Volume
- Lagoon 4 Depth and Volume
- Effluent Flow
- Alarms – Chlorinator Fail

Centralized Control System – A simple control system consisting of a plant computer should be provided to input the signals from the telemetry system. Provide process control software, and a computer display of the above operating parameters.

Good Neighbor – Make existing WWTF land available for publicly beneficial uses such as multiuse paths and wildlife habitat. Improve the water quality in Lagoon Nos. 2 and 3 with headworks improvements. Landscape the west embankments of Lagoon Nos. 2 and 3 to improve the view from adjacent neighborhoods. Provide literature to promote public understanding of the facility.

Effluent Irrigation Plan Assessment – Complete an assessment of available land suitable for spray irrigation, and in close proximity (1-mile), to the WWTF. The assessment will help to determine the feasibility of developing an independent spray irrigation facility.

Lagoon Solids Management Plan – Develop a solids management plan to identify the magnitude of solids accumulation, alternate means of removal and disposal, and estimated costs.

LEGEND

CE	CHLORINATED EFFLUENT
CGV	CHLORINE GAS VACUUM
CS	CHLORINE SOLUTION
Ⓓ	LAGOON DEPTH GAUGE
DS	DIGESTED SLUDGE
F	FLOW METER
FE	FINAL EFFLUENT
FM	FORCE MAIN
IE	IRRIGATION EFFLUENT
LE	LAGOON EFFLUENT
Ⓟ	PUMP
PE	PLANT EFFLUENT
RAS	RETURN SLUDGE
RS	RAW SEWAGE
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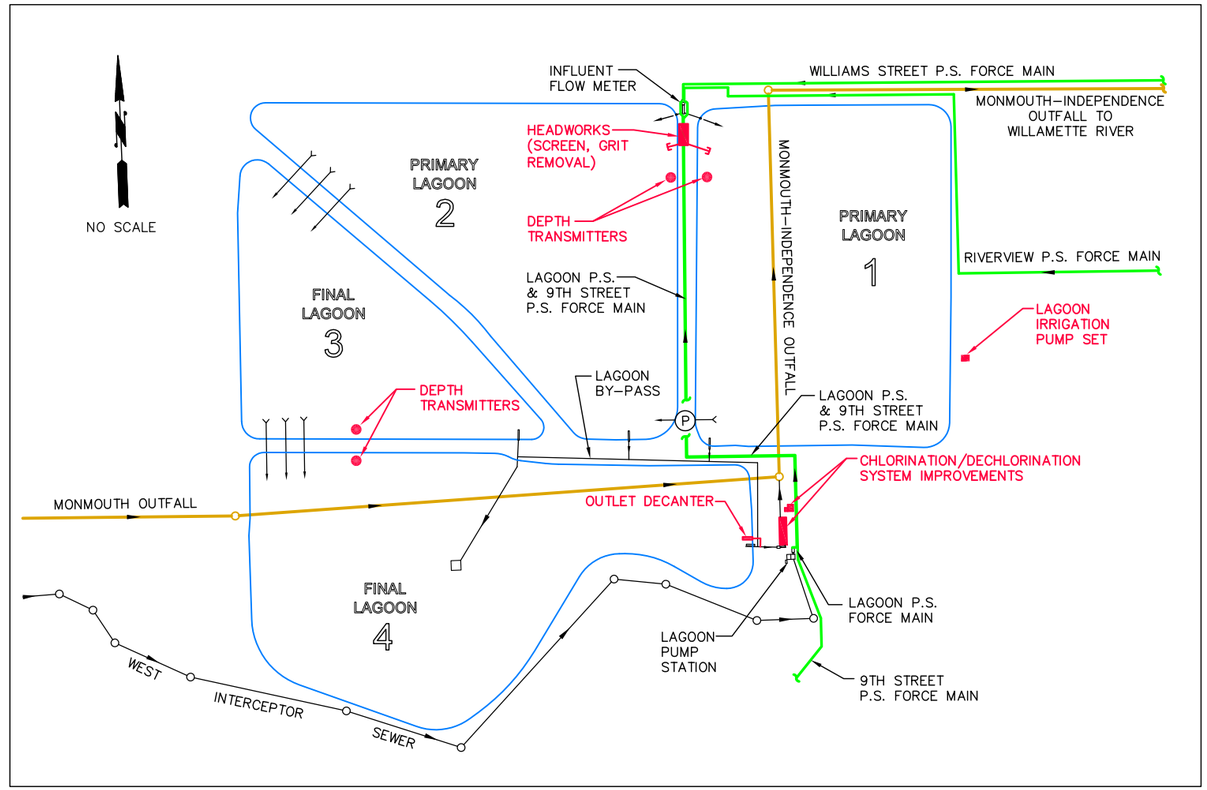
WAS	WASTE SLUDGE
W1	WATER – POTABLE
W2	WATER – PROCESS
W3	WATER – IRRIGATION



SITE PLAN

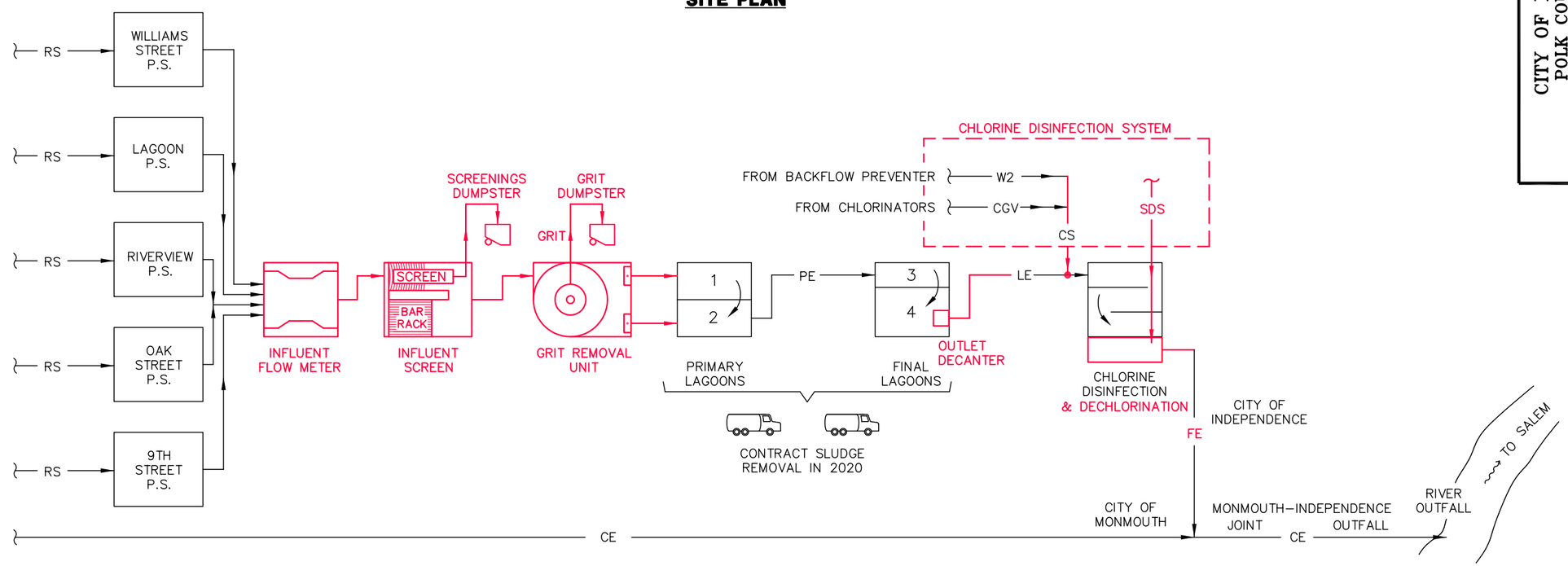


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FIGURE 5.1

CITY OF INDEPENDENCE
POLK COUNTY, OREGON

NEAR TERM WASTEWATER TREATMENT IMPROVEMENTS

5.3 Wastewater Treatment and Disposal Alternatives

The two principal *treatment* alternatives are

(1) Enhanced lagoon treatment

(2) Mechanical treatment plant

Two alternatives considered for *disposal* of treated effluent are:

(1) River discharge

(2) Spray irrigation

Alternative No. 1 will enhance lagoon treatment, with continued discharge of effluent to the Willamette River during wet weather months. Under **Alternative No. 2** a mechanical treatment plant will be developed which will significantly reduce pollutant load to the river during wet weather months. Although not allowed under the current permit, the City could request a permit modification to allow for discharge of the higher quality effluent during the summer months. However, it should be noted that such a permit modification is not guaranteed. During dry weather months, land applied spray irrigation could be used to dispose of treated and disinfected effluent under either treatment alternative.

The treatment alternatives are different in their overall approach to long-term management of the city's wastewater. However, the purpose of this planning exercise is not to establish one single approach that is exclusive. In actual application, a hybrid of both treatment alternatives could be developed. Under Alternative No. 1, enhancing lagoon treatment may require additional mechanical equipment. Under Alternative No. 2, the activated sludge plant could be designed to take advantage of the storage capacity inherent in the existing lagoons.

The following sections will identify distinct technical and financial considerations associated with the alternatives allowing for on-going consideration and evaluation. The final recommendations provided herein represent the conclusions deemed most appropriate by the engineering consultant team at the time the Master Plan was completed. Many components are complementary, address specific technical issues, and should not necessarily be considered mutually exclusive. Periodic evaluation, review, and adjustments should be made to the analysis and recommendations to address the actual future conditions.

Summer storage volumes are anticipated to approach the current storage capacity within the next 20 years. Based on treatment facility records between 1999 and 2003, the City has sufficient capacity to store the current ADWF from June 1st through October 31st. During the 1999 through 2003 time period, volume remaining at the end of the summer holding period (October 31) has ranged between 10 and 26 mg, with an average of 19 mg. Assuming that the remaining volume will be used to serve future growth at an estimated rate of 75 gpcd, in an average year the lagoons can provide storage for an additional 1,650 persons. It is clear that additional storage, summer discharge to the Willamette River outfall, or land applied spray irrigation will be required to serve the summer month needs of projected growth through the design period.

The City of Monmouth has developed and implemented a summer month spray irrigation program to accommodate summer flows exceeding the storage capacity of their lagoons. The option of creating a joint spray irrigation/effluent disposal program was considered in a feasibility study (*September 2004, Monmouth/Independence Joint Effluent Reclamation Project)* prepared by Whitaker Engineering, Inc. (Appendix G for the Draft feasibility study). To accommodate the additional flows from Independence will require that the existing Monmouth irrigation pump station and disposal site be expanded. Under this option, it will also be necessary to construct a new pump station and force main to convey treated effluent from Lagoon No. 4 to the Monmouth wastewater treatment facility. If this alternative is pursued, the City of Monmouth has also indicated that they will seek at least partial reimbursement for the pro-rated portion of the existing spray irrigation system. Capital costs for spray irrigation disposal alternatives will be provided in Chapter 6 of this master plan.

5.3.1 Alternative No. 1 - Enhance Lagoons / River Discharge / Effluent Irrigation

Alternative No. 1 is developed to analyze improving the existing lagoons, continuing use of the river outfall, and developing an effluent irrigation system. This alternative will:

- Improve the existing lagoon treatment system by removing influent solids at an upgraded headworks, deepening and lining cell Nos. 1, 2 and 3, removing algae from the final lagoon effluent, improving the disinfection system, and providing new supervisory monitoring and control.
- Continue the use of the existing river outfall during permitted wet weather months.
- Develop effluent irrigation capability by (1) identifying, permitting and developing nearby lands which can receive effluent irrigation, and/or (2) working with Monmouth to develop a two-city effluent irrigation system and management plan.

Description – Refer to the schematic and site plan on *Figure 5.2 Treatment Improvements – Alternative 1*.

Improvements **-** The Headworks and control system will be upgraded as noted in Figure 5.1 Near Term Treatment Improvements. Lagoons 1, 2 and 3 will be deepened and lined to provide added storage volume as effluent-irrigated lands are developed. A dissolved-air flotation unit, backwashing media filter and covered sand drying beds will be constructed for algae removal. The disinfection system will be upgraded to hypochlorite (tablets) or onsite-generated chlorine. An Effluent Pump Station with pumps and self-cleaning strainers will discharge through local force mains to locally irrigated lands, or through a regional main to Monmouth. At the Monmouth WWTF, the Irrigation Pump Station will be upgraded, and the existing force main will be used to send effluent to irrigated forest, pasture and crop lands south of Independence.

Process – Refer to the schematic in *Figure 5.2 Treatment Improvements – Alternative 1*. Raw sewage will be discharged to the headworks flow meter, influent screen and grit basin. The screened, de-gritted influent will then flow to influent lagoon Nos. 1 or 2, then sequentially through 3 and 4. Algae will be removed at the lagoon No. 4 outlet with a dissolved air flotation unit and a backwashing media filter. Algae solids will be pumped to a drying/composting area. Filtered effluent will then proceed to chlorine disinfection, effluent pumping, and river discharge.

The river outfall, during the 7-month discharge season, will continue to discharge effluent volumes in excess of irrigation volumes.

Advantages – The advantages of Alternative 1 are:

- *Mechanical Treatment Plant Not Needed* - Irrigating with effluent requires less treatment than does discharging to the river. This alternative will require effluent irrigation equipment and additional land, but will not require an activated sludge treatment plant and future upgrades to meet stricter river discharge requirements. Alternative No. 1 is the less complex of the two alternatives.

- *Water Reuse* - Instead of discharging the City's effluent to the Willamette and Columbia rivers, the City's effluent will be applied locally, to recharge aquifers, grow crops and reduce the demand for groundwater to irrigate.

- *Effluent Storage* - Deepening Lagoon Nos. 2 and 3 will extend the storage capacity of the system. As effluent force mains are extended to more effluent-irrigated lands, less storage will be required.

- *Willamette and Columbia River Water Quality* - As more river-discharging lagoon systems implement irrigation programs, the river will become cleaner. In this way, effluent irrigation is environmentally and socially responsible.

- *There's Time to Consider It* – The City is not currently under pressure to implement the effluent irrigating, and there will be adequate lagoon volume to store City flows for at least the next 5-years. However, since years of lead time are needed to qualify, equip, plant and grow irrigated lands, this master plan is an excellent time to begin planning and evaluation.

Drawbacks – The effluent irrigation features of Alternative 1 have some significant disadvantages:

- *Low Capitol Costs to Use the Outfall* – The river outfall is fully paid for and is believed to have years of life remaining if it is inspected and rehabilitated as described in this report. Until irrigated lands come online, lagoon effluent must continue to be discharged to the river. Near term lagoon enhancements (algae removal, disinfection, etc.) will reduce BOD and TSS loads to the river, achieving one of the main benefits of irrigation during the allowable river discharge period (November 1 – May 31).

- *Irrigation Land Requirements* – The scale of the land requirements can be estimated by reviewing Whitaker Engineering's draft *2004 Monmouth/Independence Joint Effluent Reclamation Project Feasibility Study* and other documents related to the effluent reclamation project implemented by similarly-sized City of Monmouth. The report estimates that Independence will need approximately 300 acres of developed irrigation land, complete with a City-Owner contract, force main to the site, irrigation equipment, and forest, or grass crop in place.

- *Finding Irrigation Land* – Monmouth, in implementing the city's effluent irrigation program, was able to find and DEQ-certify land after a process which included negotiating with large landowners, public information, and considerable effort. However, finding cost-effective land adjacent to the existing Independence facility is not assured, and requires time, legal preparation, public input, and engineering analysis.

- *Compensating the Property Owner* – The landowner must be assured that irrigating with effluent is a financially solvent enterprise. Typically, the City must pay for the right to dispose of its effluent on the landowner's land and this represents an on-going operational expense.

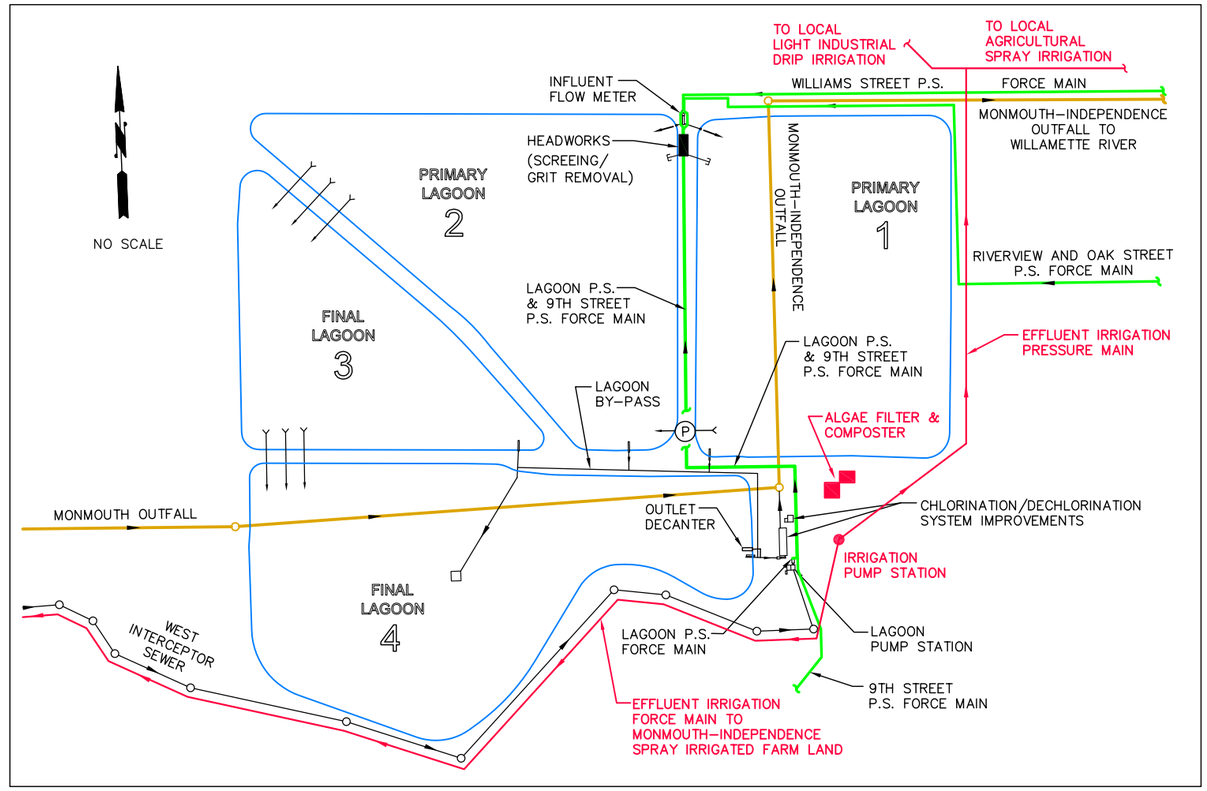
- *Complexity of Effluent Irrigation* – Although the complexity of an activated sludge plant will be avoided, it may be similarly difficult to balance the needs of the two City plants to discharge against those of the landowner's crop

- *Cost Savings of Effluent Irrigation* – Cost estimates and comparisons provided in Chapter 6 highlight the economic tradeoffs between the enhanced lagoon and treatment plant alternatives. The spray irrigation effluent disposal to the Monmouth facility alternative will have additional costs for effluent pumping, straining, force main to Monmouth, irrigation pump station in Monmouth, spray irrigation equipment, reimbursement to Monmouth for initial capital investment, and for use of the disposal lands. These costs would partially offset by the savings of not providing treatment for continued discharge to the river.

It should be noted that aerators are not recommended as part of the mechanical equipment required to enhance the operational efficiency of the existing WWTF. Installation of aerators would require retrofitting the existing cells of the lagoon which likely include dredging and lining. Furthermore, the visual, noise, and potential odor impacts of aerators make them unsuitable or at least aesthetically undesirable in close proximity to residences or businesses. The items listed in Alternative No. 1 above are more cost effective and a better long term approach for enhancing the existing WWTF.

LEGEND

CE	CHLORINATED EFFLUENT
CGV	CHLORINE GAS VACUUM
CS	CHLORINE SOLUTION
Ⓓ	LAGOON DEPTH GAUGE
DS	DIGESTED SLUDGE
F	FLOW METER
FE	FINAL EFFLUENT
FM	FORCE MAIN
IE	IRRIGATION EFFLUENT
LE	LAGOON EFFLUENT
Ⓟ	PUMP
PS1/PS2	IRRIGATION PUMP STATION
PE	PLANT EFFLUENT
RAS	RETURN SLUDGE
RS	RAW SEWAGE
SDS	SULFUR DIOXIDE SOLUTION
WAS	WASTE SLUDGE
W1	WATER – POTABLE
W2	WATER – PROCESS
W3	WATER – IRRIGATION



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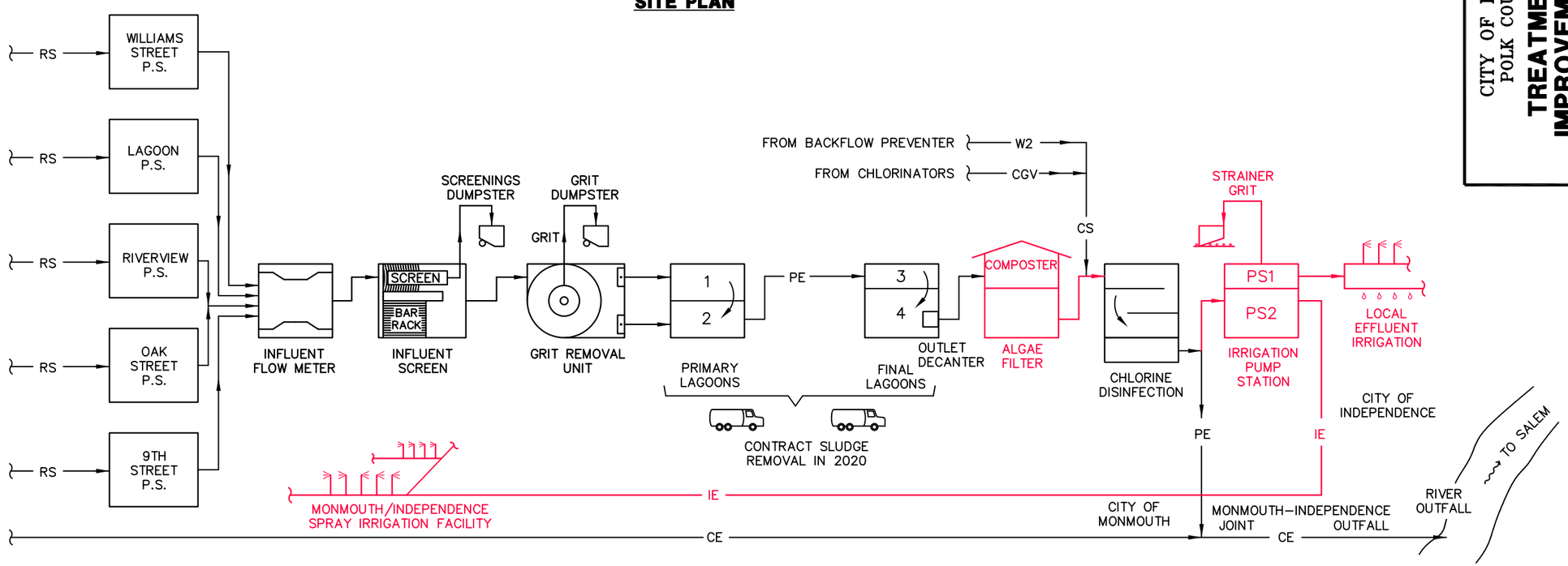

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FIGURE 5.2

CITY OF INDEPENDENCE
POLK COUNTY, OREGON

TREATMENT FACILITY IMPROVEMENTS - ALT 1

5.3.2 Alternative No. 2 Activated Sludge Treatment / River Discharge

Alternative No. 2 improves the existing treatment facility, supplementing the lagoon treatment system with a mechanical treatment plant, and continuing to use the river outfall. Alternative No. 2 will:

- Improve the existing lagoon treatment system by removing influent solids at an upgraded headworks, place additional riprap on the dikes of cell Nos. 1, 2 and 3, provide an mechanical treatment plant, improve the disinfection system, and provide a new supervisory monitoring and control system.
- Develop the ability to discharge higher volumes of effluent and discharge less frequently by reducing the pollutant concentration levels in the effluent, and controlling the plant discharge to vary in response to Willamette River flows.
- Continue use of the existing river outfall while the City develops effluent irrigation capabilities.

Description – Refer to the schematic and site plan on *Figure 5.3 Treatment Improvements – Alternative 2*.

Improvements - The Headworks and control system will be upgraded as shown in *Figure 5.1 Near Term Treatment Improvements*. Lagoon Nos. 1, 2 and 3 will be riprapped to maintain the banks. In the southeast corner of the plant, an activated sludge plant – basin/clarifier, sequencing batch reactor, or oxidation ditch/clarifier will be constructed. The plant will be designed to allow future upgrades to provide nitrogen removal and tertiary filtration if required by stricter permit requirements. The disinfection system will be upgraded to hypochlorite (tablets), onsite-generated chlorine, or ultraviolet disinfection. If chlorine disinfection is provided, a dechlorination facility will be constructed downstream of the chlorine contact basins.

Process – Refer to the Schematic shown in *Figure 5.3 Treatment Improvements – Alternative 2*. Raw sewage will be discharged to the headworks flow meter, influent screen and grit basin. The screened, de-gritted influent will then discharge to the north end of Lagoon No. 1, which will serve as a flow equalization basin. The plant will receive most flow directly from the headworks during dry weather. During wet weather, some influent sewage will proceed directly to the plant, and the balance will discharge to Lagoon No.1. The plant will also intake "equalized" effluent from the south end of Lagoon No. 1. Secondary effluent from the plant will then proceed to chlorine or UV disinfection, dechlorination if required, and finally to river discharge.

For economy, local irrigated lands will be used to the greatest extent possible. If necessary and economically viable, lands south of Monmouth will be developed through a Monmouth-Independence joint effluent irrigation system. The river outfall, during the 7-month discharge season, will continue to discharge effluent volumes in excess of irrigation volumes.

Advantages – The advantages of treatment plant Alternative No. 2 are:

- *Irrigation System May Not be Required* - Irrigating with effluent, and all of the attendant responsibilities described above, will be minimized if a dry weather discharge is allowed under a modified permit.

- *Low Capitol Costs to Use the Outfall* – The river outfall is fully paid for and likely has years of life left if it is regularly inspected and maintained.

- *Water Reuse* – Some of the City's effluent can still be applied locally if irrigable lands are identified and developed.

- *Willamette and Columbia River Water Quality* - As more river-discharging lagoon systems are upgraded to activated sludge treatment facilities, the river will become cleaner.

- *Reduced Pollutant Loads to the River* - If the City builds a mechanical treatment plant, BOD and TSS levels and loads will drop dramatically. The plant can also be upgraded in the future to provide tertiary treatment and other forms of reuse. Constructing a system to improve treatment efficiency and reduce effluent pollutant concentrations is environmentally and socially responsible.

- *Building a Plant Would Not Preclude Future Effluent Irrigation* – Treating the effluent to a higher level will help qualify it to be applied to urban landscaping and parks.

- *There is Time to Think About It* – The City is not required to build a treatment plant. There will be adequate lagoon volume to store City flows for at least the next 5-years if the 5-month storage requirement is maintained by DEQ.

Drawbacks – Alternative 2 disadvantages are:

- *Paying for the Treatment Plant, and Operations and Maintenance Costs* – Cost estimates and comparisons provided in Chapter 6 highlight the economic tradeoffs between this alternative and the enhanced lagoon alternative. This treatment plant alternative may allow the city to avoid the additional costs for effluent pumping and irrigation, and the complexity of sharing these costs with Monmouth. However, the City must pay the capital, operation, and maintenance costs to build and maintain a mechanical treatment plant.

- *Complexity* – A treatment plant will be more complex to operate than a lagoon system. Operators will need to obtain training to upgrade their certification.

- *Solids Management* –Solids handling is also a significant on-going operational cost. Where the lagoon alternative will require expensive, infrequent, contract sludge removal, a mechanical treatment plant will treat and dispose of sludge on a daily basis.

LEGEND

CE	CHLORINATED EFFLUENT
CGV	CHLORINE GAS VACUUM
CS	CHLORINE SOLUTION
(D)	LAGOON DEPTH GAUGE
DS	DIGESTED SLUDGE
F	FLOW METER
FE	FINAL EFFLUENT
FM	FORCE MAIN
IE	IRRIGATION EFFLUENT
LE	LAGOON EFFLUENT
(P)	PUMP
PE	PLANT EFFLUENT
RAS	RETURN SLUDGE
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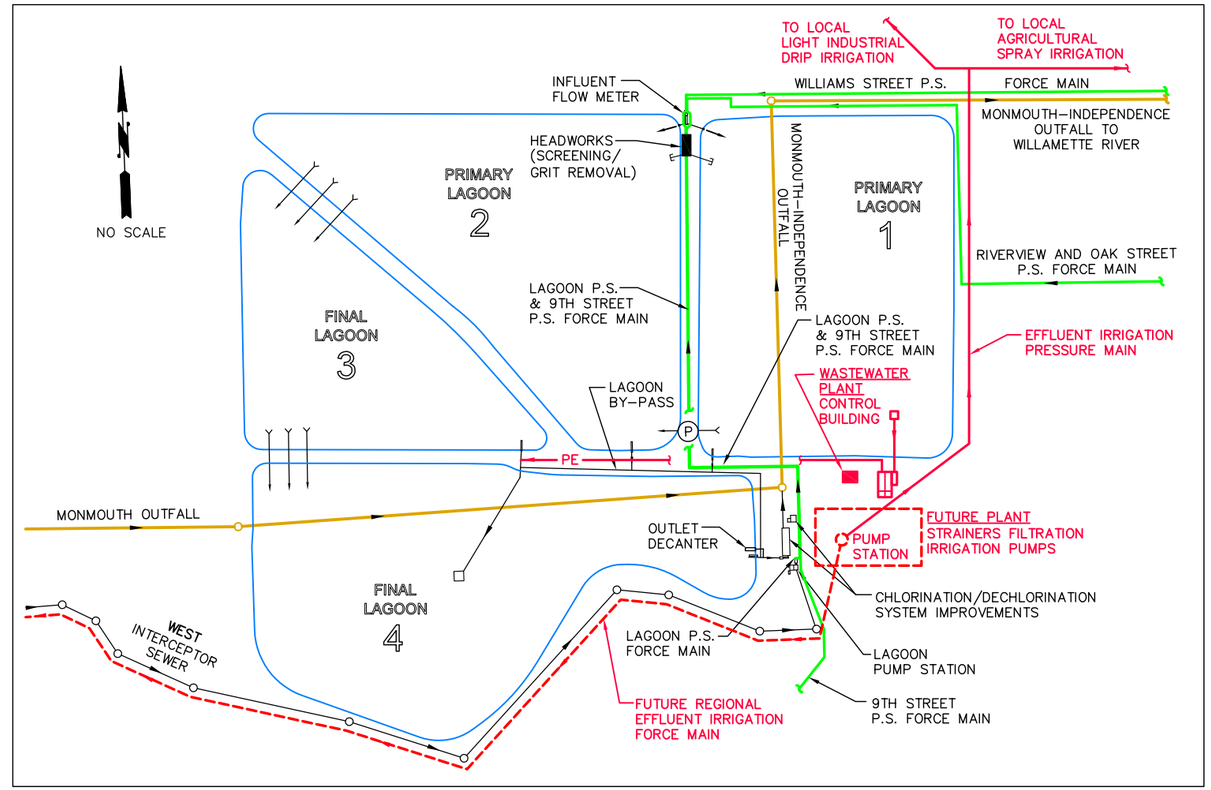

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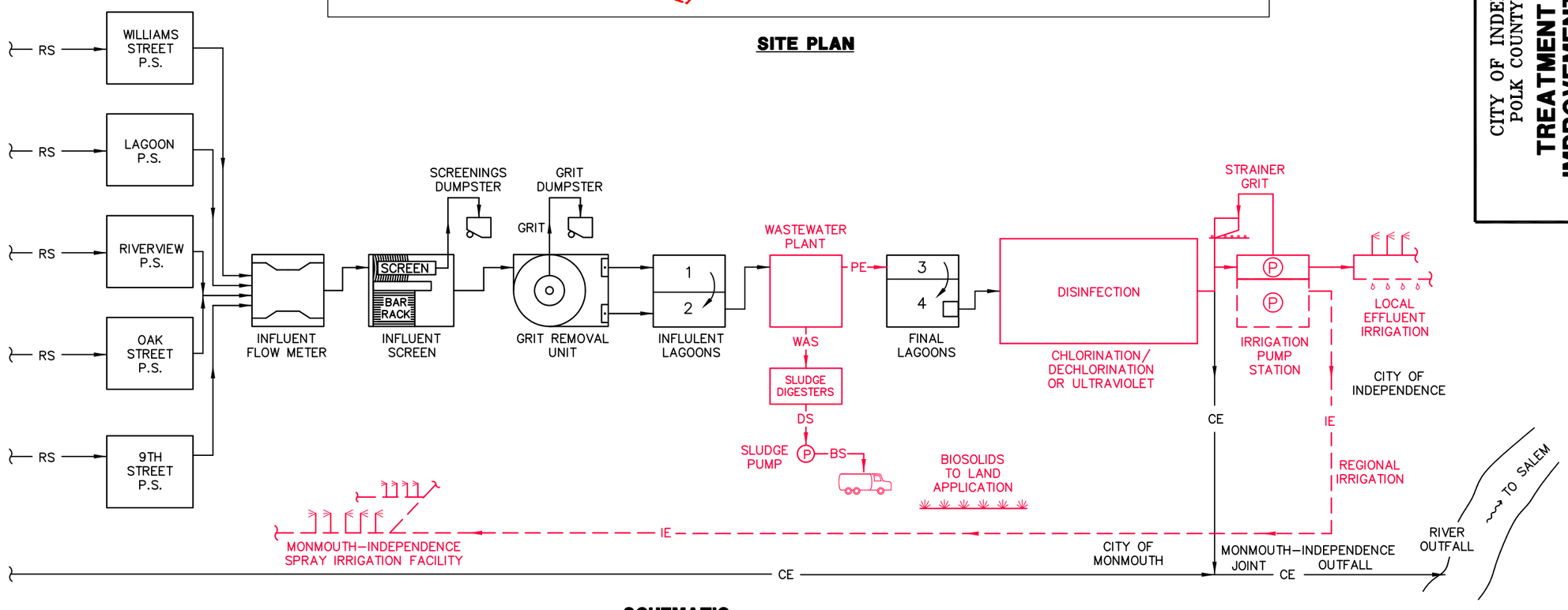

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FIGURE 5.3

CITY OF INDEPENDENCE
POLK COUNTY, OREGON

TREATMENT FACILITY IMPROVEMENTS ALT - 2

6 RECOMMENDATIONS AND COST ESTIMATES

This section compares the alternatives and improvements identified in previous sections and recommends a strategy by which the best aspects of both alternatives can be implemented. To ensure that the City only builds what is needed at the time it is needed, construction in phases over time is an essential part of these recommendations

6.1 Comparison of Wastewater Treatment Alternatives

6.1.1 Goals

Minimizing cost and saving money is an important factor when comparing alternatives, but it is only one of the goals. To compare and evaluate the two alternatives, it is useful to apply the project goals and objectives developed in Section 5. Both of the alternatives are feasible, and both can be implemented in a manner that will achieve the plan goals.

6.1.2 Cost Comparison

Cost estimates developed in this chapter are planning level cost estimates based on manufacturers' cost quotations, standard engineering cost estimating practices, and similar projects.

6.1.3 Decision Matrix

A Decision Matrix of Alternatives was developed and shown in Table 6.1. Decision matrices are summaries that are often used to compare alternatives. The advantages are sometimes converted to a numerical system to facilitate decisions, but this system of decision-making can sometimes appear somewhat arbitrary.

Wastewater master plans are intended to make it easier for decision-makers and individuals in the City to choose between complex alternatives. In developing this master plan the consultant team has developed a "decision matrix," comparison tables, and illustrations, but their overall purpose is to assist the decision-makers and the public in the comparison and developing consensus for the most appropriate system and future facility improvements.

Table 6.1 Decision Matrix - Wastewater Treatment Alternatives

Wastewater Planning Goal	BENEFIT IN IMPLEMENTING GOAL			COMPARISON OF ALTERNATIVES
	Near-Term Improvements	Alternative 1 Enhanced Lagoons	Alternative 2 Secondary Plant	
1 Accommodate Growth for Next 20 Years		**HIGH**	**HIGH**	Near term improvements will not increase treatment capacity. Alternatives 1 and 2 will increase capacity.
2 Meet DEQ Requirements	**HIGH**			The near-term improvements will allow the plant to comply with the permit.
No Discharge June 1 to October 31		**HIGH**		Under Alternative 2 the City could request that DEQ permit a longer discharge season due to the cleaner effluent and reduced pollutant concentrations.
Remove 85% BOD and 65% Solids		**MODERATE**	**HIGH**	Treatment plants remove BOD and solids better than do lagoons. Alternative 2 would reduce pollutant concentrations and mass discharge to the river.
Remove Bacteria		**HIGH**	**HIGH**	Alternative 2 can disinfect with UV because effluent is more transparent.
Remove Drugs and Care Products		**MODERATE**	**HIGH**	Both.
Prevent Chlorine Toxicity to River		**HIGH**	**HIGH**	Both alternatives will address chlorine toxicity.
3 Cost: Build Affordable Improvements	**$728,726**	**$3.38 Million**	**$4.94 Million**	Alternative 1 is the apparent least cost alternative.
4 Apply Appropriate Technology	**HIGH**	**Moderate**	**HIGH**	Mechanical treatment alternative can apply state of the art and cost effective technology.
5 Improve Willamette River Water Quality		**MODERATE**	**HIGH**	Alternative 2 will minimize pollutant discharge to the river.
6 Enhance Open Space and Wildlife Habitat		**MODERATE**	**HIGH**	Both alternatives will support an Ash Creek bike path.
7 Conserve Water		**HIGH**	**MODERATE**	
8 Conserve Energy		**MODERATE**	**MODERATE**	Alternative 2 will have additional plant equipment.
9 Be a Good Neighbor		**MODERATE**	**HIGH**	Both alternatives will support an Ash Creek bike/pedestrian path. Alternate 1 will provide the cleanest lagoon operation near residences. Alternate 2 will allow for reduced lagoon size and increased buffers between adjacent neighborhoods.

Legend	
HIGH	Greatly helps to achieve goal
MODERATE	Constructive in helping achieve goal
[blank]	Does not help meet goal

6.1.4 Precision of Estimate

In this chapter, the costs for implementation of the recommended improvements are estimated. As a first step in estimating costs, it is necessary to determine the precision required for the costs based on the amount of detailed information available at the time of the estimate. The two levels used for estimating purposes are preliminary costs, and detailed costs.

6.1.4.1 Preliminary Costs

Preliminary estimates are generally developed early in the formulation of potential projects to aid in determining the feasibility of a project and analyze multiple alternatives. They are also used by the engineer or owner to develop financing for the construction of the project, and budget for increased manpower as well as operation, maintenance, and replacement (OM&R) annual costs. The two levels of approximate costs developed for these purposes are as follows:

Budget Cost Estimate

The budget level cost estimate is the most preliminary of cost estimates, developed once basic concepts and preliminary layouts are prepared. This level groups many cost elements together, to determine the general cost guidelines that will be associated with implementing such a project. Sometimes, the long-term costs associated with operation, maintenance and repair are included, to the extent that they may differ between alternatives being considered. Whereas individual elements will vary widely within the total project cost, the goal of the budget estimate is to provide costs in the range of plus or minus 20 to 30 percent of the expected costs.

Conceptual Cost Estimates

At this level, preliminary sketches or concept layouts of the project have been completed. The major elements of the project have been identified but not yet detailed. Design has been completed only to the level of layout of preferred alternatives, with the details remaining to be completed. The concept is firmed up somewhat from the budget estimate since the major project elements have been scoped and identified, but can still be expected to deviate from actual costs by as much as a plus or minus 15 to 25 percent.

6.1.4.2 Master Plan Cost Estimates

The cost estimates prepared in this Sanitary Sewer System Master Plan, should be considered Budget Level Cost Estimates. Basic concepts and preliminary layouts have been established. However, this has been completed with general and in most cases, a broad understanding of the technical factors and specific site conditions that will affect final design and construction. For larger projects, preliminary designs and analysis is warranted to provide further detail and refinement of specific project elements and associated costs.

6.1.5 Basis of Cost Estimates

All costs presented herein are based on current construction practices and recent general bid pricing for similar work. Because these costs will tend to escalate over time, they are presented in year 2005 dollars, and should be adjusted to account for inflation over time if the construction is delayed. The recommended method is to utilize a construction cost index prepared by Engineer News Record (ENR index), which compiles data from 20 major U.S. cities into an index that is adjusted and published weekly.

The ENR index for this plan was selected to be 7,421 as published in Engineering News Record in July 2005. The preliminary design report estimates can be adjusted for future projects by applying the ratio of the ENR index at the time of construction to 7,421, and multiplying the estimated project cost by the result. Although the ENR index is not an absolute measure of trends to a particular area, it is widely recognized as a viable method for estimating the general escalation of construction costs over time.

Costs for improvements to existing pump stations and construction of new wastewater treatment facilities do not fall within the framework of historical construction cost trends, since each is unique in some fashion. The costs included in this Master Plan reflect current research and contact with equipment suppliers and industry representatives.

In this report, we have grouped costs to represent total construction costs on a "per foot complete" basis for the construction of pipelines. Included in these costs are pipe materials, excavation, native surface restoration (where applicable), an allowance for connection to existing facilities, abandoning existing facilities which are no longer needed, and other miscellaneous items and costs. Since many of these items are not broken out separately, the per foot costs may appear higher than actual construction per foot costs.

6.1.5.1 Engineering, Administration, Legal, and Contingency Costs

For each project that is undertaken, certain costs will be realized that must be figured into the overall cost estimate. History has shown that these costs can be expressed as a percentage of the construction cost with relative accuracy for this level of estimate. The factors we have included in our estimates are summarized in Table 6.2.

Table 6.2 Cost Estimate Factors

Description	Estimated Percentage of Construction Cost
Engineering and Project Administration, includes:	17%
Pre-Design Report and Facilities Plan	
Geotechnical Investigations	
Design and Construction Surveys	
Design Documents (Plans, Specifications and Contract Documents)	
Construction Inspection	
Record Drawings	
Operation and Maintenance Manuals	
Construction and Financial Management	
Legal, Administrative, Property Acquisition	7%
Contingency:	20%
TOTAL	**44%**

The total engineering, project administration, legal, and contingency factor of 44-percent is applied to each of the project construction cost estimates that follow, yielding the following formula:

Total Estimated Project Cost = 1.44 x Estimated Construction Cost

6.2 Estimated Costs for Capital Improvements

Cost estimates for the sewage collection system improvements necessary to serve the projected future growth as identified in Sections 4 and 5 are summarized in Table 6.3. Also included are cost estimates for the near term and long term (Alternatives 1 and 2) wastewater treatment facility improvements. Detailed estimates for all improvements are provided in Appendix B.

This Master Plan can serve as an important supporting document to a Systems Development Charge (SDC) methodology that will be an important funding mechanism as the City seeks to meet future growth and demand on the sanitary sewerage system. The recommended improvements identified in this Master Plan are anticipated to be necessary to provide for a rational and economically efficient development of this infrastructure. The estimated costs should serve as the basis for establishing SDC's allowing for the collection and establishment of a sinking fund so that money is available when these improvements are required.

Table 6.3 – Summary of Estimated Capital Improvement Program

PROJECT		NEAR TERM IMPROVEMENTS	LONG TERM IMPROVEMENTS	RECOMMENDED IMPROVEMENT ALTERNATIVE
TREATMENT IMPROVEMENTS				
T-1	Alternative 1 - Wastewater Treatment Facility Improvements	$728,726	$3,376,426	
T-2	Alternative 2 - Wastewater Treatment Facility Improvements	$728,726	$4,212,864	$4,941,590
	SUBTOTAL			**$4,941,590**
COLLECTION SYSTEM IMPROVEMENTS				
C-1	North Interceptor – Replacement		$728,280	$728,280
C-2	Stryker Road – Interceptor Replacement		$827,784	$827,784
C-3	West Interceptor – Replacement Gunclub to Lagoon P.S.		$1,045,612	$1,045,612
C-4	West Interceptor – Replacement West End to Gunclub Road		$363,816	$363,816
C-5	Southwest Interceptor – Future		$644,796	$644,796
C-6	Southeast Interceptor – Future		$1,057,932	$1,057,932
	SUBTOTAL			**$4,668,221**
PUMP STATION IMPROVEMENTS				
PS-1	Gunclub Road Pump Station – Future		$707,328	$707,328
PS-2	9TH Street Pump Station – Upgrade		$730,800	$370,800
PS-3	Brier Pump Station – Replacement		$402,048	$402,048
PS-4	Williams Street – Replacement		$543,888	$543,888
PS-5	North Pump Station – Replacement		$440,640	$440,640
PS-6	13TH Street Pump Station – Replacement		$479,808	$479,808
	SUBTOTAL			**$2,944,512**
SPRAY IRRIGATION IMPROVEMENTS				
SI-1	Independence Facility, Riddle Site		$3,034,080	
SI-2	Independence Facility Within 1-Mile of WWTF		$1,968,480	
SI-3	Joint Monmouth/Independence Facility		$2,164,320	$2,164,320
	SUBTOTAL			**$2,164,320**

6.3 Recommended Wastewater Treatment Alternative

The construction of a new treatment plant and/or spray irrigation facilities will not be required until the population reaches approximately 8,800 persons. However, due to the time required to develop project financing, and preliminary and final plans, the decision as to what treatment and disposal alternative is most appropriate should be made now. Identifying, permitting and developing new irrigation disposal sites can further extend the lead time necessary before improvements are actually operational.

The two wastewater treatment alternatives have similar capital cost, but the treatment facilities described under Alternative No. 2 provide a greater value, and are more flexible with respect to accommodating future upgrades and conforming with future requirements.

Effluent irrigation is an environmentally and socially responsible endeavor that will not be precluded by development of a treatment facility as outlined under Alternative No. 2. Higher treatment will produce effluent suitable for a wider range of irrigation applications.

When considering alternatives for disposal of treated effluent, Summer holding and wet weather discharge to the Willamette River have more "known costs" than spray irrigation. Because it will utilize standard construction and equipment, and familiar processes there appear to be fewer unknowns. In contrast, spray irrigation will encompass the "less well known" costs of land, crops, and the costs and political administrative and regulatory complexity of sharing a major utility with another city.

On the basis of the factors noted above points and information received at the time of this report submittal, treatment Alternative No. 2 is the recommended alternative.

Long term, spray irrigation effluent disposal will be necessary to accommodate some of the dry weather flows associated with projected growth at buildout. The budget level cost estimates completed for this master plan were prepared in cooperation with Whitaker Engineering and City of Monmouth staff. These estimates indicate that the capital costs associated with participating in a combined Monmouth/Independence irrigation facility will be higher than that of developing a separate facility. The additional cost of a combined facility is primarily due to two significant factors:

- Construction of a pump station and 7,800 feet of pressure force main to convey treated effluent from the Independence WWTF to the Monmouth WWTF.
- The potential reimbursement cost to cover the pro-rated portion of Monmouth's existing spray irrigation facility.
- Improvements to the irrigation pump station at the Monmouth WWTF.

However, the unknowns and uncertainty associated with the development of a new a separate irrigation facility dedicated solely for the City of Independence appears to outweigh the lower estimated capital cost.

In preparing the cost estimates included in this master plan it has been assumed that there will be no reimbursement to Monmouth for a pro-rated share of the existing irrigation. If this is not the agreement between the two City's, the actual reimbursement amount will be an additional capital cost which will further separate the irrigation alternatives and may justify pursuit and development of separate facilities.

6.3.1 Description

The schematic and site plan (Figure 5.3) of Alternative 2 show the general features of the recommended system:

Headworks - The Headworks and control system will be upgraded to provide influent screening and grit removal as shown in *Figure 5.1 Near Term Improvements*.

Mechanical Treatment Plant - In the southeast corner of the plant, an activated sludge plant – basin/clarifier, sequencing batch reactor, or oxidation ditch/clarifier will be constructed. The plant will be designed to allow for future upgrades to provide nitrogen removal and tertiary filtration if required by stricter permit requirements.

Solids Handling Area – Covered sludge drying beds, sludge pumps, lime stabilization, sludge truck loading and other solids facilities will be provided in a solids handling area.

Digester and Sludge Storage Lagoon – Digested sludge from the system's aerobic sludge digester will be stored in an anaerobic sludge lagoon during the sludge storage season.

Disinfection Facility - The disinfection system will be upgraded to use hypochlorite (tablets), onsite-generated chlorine, or ultraviolet disinfection. If chlorine disinfection is provided, a dechlorination facility will be constructed downstream of the chlorine contact basins.

Local Effluent Irrigation – Conduct a feasibility study on development of local effluent irrigation areas which can be used without committing to joint effluent irrigation with Monmouth. As a separate effort, provide lagoon irrigation pump, standpipes, hose reel and irrigation gun as requested by operators and indicated to allow for summer spray (evaporation) of the lagoon surface.

Effluent Outfall to River – Inspect and evaluate the condition of effluent pipe line and outfall. Update the computer outfall model to assess the outfall capacity, maintenance needs, estimate dispersion/dilution in the outfall zone, and summarize findings in report.

Parts of the recommended system will be constructed as the recommended near term improvements described in *Chapter 5 Common Features of Alternatives* and shown in *Figure 5.1 Near Term Treatment Improvements*. The mechanical treatment plant and disinfection system will be built in later years, when needed to accommodate growth when total population approaches 8,800.

7 CAPITAL IMPROVEMENT PLAN

7.1 Description of Capital Improvement Plan

The capital improvements are organized into the following three categories:

- Treatment/Effluent Disposal Facilities
- Collection System
- Pump Stations

Section 3 of this masterplan reviewed and analyzed the City's existing sewer system. This analysis aided in the identification of the future conditions as described in detail in Sections 4, 5 and 6 as shown in Figures 4.3, 5.1, and 5.3. These recommend Capital Improvements were separated into these three categories with estimated construction cost in Table 6.3 above.

The Capital Improvement Program (CIP) summarized in Table 6.3 is based on information currently available. As the City implements the recommendations, the cost and timing of the projects may be revised.

7.2 Sources of Funding

There are several potential sources of funding for the capital improvements outlined in the Master Plan. Funding sources include but are not limited to user fees, systems development fees (SDC's), grants and loans. The City has successfully utilized all of these funding sources and financial tools to finance previous capital improvement projects. Programs previously used or ones that appear to be attractive at the time this plan was prepared are summarized below:

- ***Community Development Block Grant Program***

  The Department of Housing and Urban Development (HUD) has traditionally made assistance available to low and moderate income persons. In Oregon, some HUD funds are administered through the Oregon Economic Development Department (EDD) under the Oregon Community Development Block Grant Program (CDBG). The City has applied for and received grants for other public works projects over the last five years and there is a high potential for additional grant funding for some of the improvements noted in the master plan.

- ***Rural Development Program***

  The Rural Development program was formerly known as the Farmer's Home Administration administers grants and loans to communities in need of financial assistance. The City has applied for and received $2,688,225 in low interest loans from the Rural Development agency as part of the 1998 sewer improvement project. The terms of the loan include a 40-year payback time frame.

- ***Systems Development Charges***

  Systems development charges (SDC's) are assessed to new development to reflect the impact on existing facilities. Typically this is calculated in terms of hydraulic and treatment capacity

that must be made available to serve the new development. SDC's must be applied in a manner that requires new development to pay their "fair share" of the cost and impact to the City's sewerage system. This master plan is an important first step in establishing a strategy and associated costs to serve the City Limits and Urban Growth Boundary. A fair and equitable distribution of the costs associated with providing service to the entire service area must be determined through the subsequent development of a SDC Methodology. SDC's are an important component of the funding strategy for capital improvements.

- ***User Fees***

  User fees are applied to cover operational and maintenance costs, and the cost to finance capital improvements. City records indicate that there are 2,012 users connected to the sewerage system. The City's current base monthly sewer user charge is $24.82.

  Low interest loans and bonds are two financial tools that can be used to pay for capital improvements. Both are essentially loans that must be paid back through user fees.

7.3 Capital Improvement Plan

The following sections outline the general planning timeline for improvements that have been identified as necessary to address current operational capacity concerns, current or future regulatory requirements, and anticipated future capacity short falls. Additional improvements have been identified that are anticipated to be necessary to expand the service area to accommodate projected growth and development within the current City Limits and Urban Growth Boundary (UGB).

7.3.1 Near Term Improvements

The Near Term sewerage system improvements consist of current facilities that are; at the end of their useful life, where the current facilities are unable to support build-out, or an upgrade that will improve system efficiency, reliability, and redundancy. Many of these items will become necessary when population growth approaches 8,800. These items are assumed to be on a 2 to 10 year timeline and could be funded by City revenue, SDC's, or by private development.

7.3.2 Long Term Improvements

The Long Term sewerage system improvements consist of current facilities that will add reliability and redundancy to the sewerage system, and are necessary to serve undeveloped portions of the current service area. These items are frequently on a 10 to 20 year timeline and many could be funded by user fees, SDC's, and private development.

8 REFERENCES

Planning Documents and Investigations

- *1996 City of Independence Sanitary Preliminary Design Report*, November 1996
- *1996 Mixing Zone Study for the Wastewater Treatment Facility Outfall*, August 1996
- *Draft Monmouth-Independence Joint Effluent Reclamation Project Feasibility Study*, September 2004
- *Smoke Testing Reports*, 2001, C-More Pipes
- *Television Inspection Reports*, 2001, C-More Pipes,
- 1994 *City of Independence Facilities Plan Update, Volume I-II*, August 1994
- State of Oregon Department of Environmental Quality *Guidelines for Making Flow Projections for Sewage Treatment*: MMDWF, MMWWF, PIF,

Construction Documents

- *1978 City of Independence, Oregon Wastewater Treatment Expansion Drawings*
- *1979 Monmouth-Independence, Oregon Outfall Sewer Drawings*
- *1998 Plans for Construction of the Sanitary Sewer System Improvements for the City of Independence, Oregon*

Professional Standards of Practice

- *Design of Municipal Wastewater Treatment Plant, Manual of Practice 8, WEF/ASCE, 1998*
- *Natural Systems for Wastewater Treatment Manual of Practice, FD-16, WEF/ASCE, 1990*

APPENDIX A

Existing City of Independence WWTF NPDES Permit

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
WASTE DISCHARGE PERMIT

Department of Environmental Quality
Western Region – Salem Office
750 Front Street NE, Suite 120, Salem, OR 97301-1039
Telephone: (503) 378-8240

Issued pursuant to ORS 468B.050 and The Federal Clean Water Act

ISSUED TO:
Independence, City of
PO Box 7
Independence, OR 97351

SOURCES COVERED BY THIS PERMIT:

Type of Waste	Outfall Number	Outfall Location
Treated Wastewater	001	R.M. 95.5

FACILITY TYPE AND LOCATION:
Stabilization Lagoons without Aeration
Independence STP
End of Williams Street
Independence, Oregon

Treatment System Class: I
Collection System Class: Level II

RECEIVING STREAM INFORMATION:
Basin: Willamette
Sub-Basin: Middle Willamette

Receiving Stream: Willamette River
Hydro Code: 1227618456580 95.5 D
County: Polk

EPA REFERENCE NO: OR002044-3

Issued in response to Application No. 990232 received May 28, 1999.
This permit is issued based on the land use findings in the permit record.

Michael H. Kortenhof, Water Quality Manager
Western Region

May 4, 2004
Date

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to construct, install, modify, or operate a wastewater collection, treatment, control and disposal system and discharge to public waters adequately treated wastewaters only from the authorized discharge point or points established in Schedule A and only in conformance with all the requirements, limitations, and conditions set forth in the attached schedules as follows:

Page
Schedule A - Waste Discharge Limitations not to be Exceeded 2
Schedule B - Minimum Monitoring and Reporting Requirements 4
Schedule C - Compliance Conditions and Schedules 7
Schedule D - Special Conditions 8
Schedule F - General Conditions 10

Unless specifically authorized by this permit, by another NPDES or WPCF permit, or by Oregon Administrative Rule, any other direct or indirect discharge to waters of the state is prohibited, including discharge to an underground injection control system.

SCHEDULE A

1. **Waste Discharge Limitations not to be exceeded after permit issuance.**

a. Treated Effluent Outfall 001 (See Note 3)

(1) June 1 - October 31: No discharge to waters of the State (unless approved in writing by the Department)

(2) November 1 - May 31:

Parameter	Average Effluent Concentrations Monthly	Weekly	Monthly* Average lb/day	Weekly* Average lb/day	Daily* Maximum lbs
BOD_5	30 mg/L	45 mg/L	500	750	1000
TSS	50 mg/L	80 mg/L	830	1200	1700

* Average dry weather design flow to the facility equals 0.6 MGD. Winter mass load limits based upon average wet weather design flow to the facility equaling 2.0 MGD.

(3)

Other parameters	Limitations
E. coli Bacteria	Shall not exceed 126 organisms per 100 mL monthly geometric mean. No single sample shall exceed 406 organisms per 100 mL. (See Note 1)
pH	Shall be within the range of 6.0 - 9.0
BOD_5 and TSS Removal Efficiency	Shall not be less than 85% monthly average for BOD_5 and 65% monthly for TSS.
Total Chlorine Residual	Shall not exceed 1.0 mg/l daily maximum.

(4) Except as provided for in OAR 340-45-080, no wastes shall be discharged and no activities shall be conducted which violate Water Quality Standards as adopted in OAR 340-41 except in the following defined mixing zone:

The allowable mixing zone is that portion of the Willamette River contained within a band extending out fifty (50) feet from the west bank of the river and extending from a point fifty (50) feet upstream of the outfall to a point three-hundred (300) feet downstream from the outfall. The Zone of Immediate Dilution (ZID) shall be defined as that portion of the allowable mixing zone that is within thirty (30) feet of the point of discharge.

(5) Raw sewage discharges are prohibited to waters of the state from November 1 through May 21, except during a storm event greater than the one-in-five- year, 24-hour duration storm, and from May 22 through October 31, except during a storm event greater than the one-in-ten-year, 24-hour duration storm.

If an overflow occurs between May 21 and June 1, and if the permittee demonstrates to the Department's satisfaction that no increase risk to beneficial uses occurred because of the overflow, no violation shall be triggered if the storm associated with the overflow was greater than the one-in-five-year, 24-hour duration storm.

(6) No activities shall be conducted that could cause an adverse impact on existing or potential beneficial uses of groundwater. All wastewater and process related residuals shall be

managed and disposed in a manner that will prevent a violation of the Groundwater Quality Protection Rules (OAR 340-040).

NOTES:

1. If a single sample exceeds 406 organisms per 100 mL, then five consecutive re-samples may be taken at four-hour intervals beginning within 48 hours after the original sample was taken. If the log mean of the five re-samples is less than or equal to 126 organisms per 100 mL, a violation shall not be triggered.

2. Upon approval of a Total Maximum Daily Load for this sub-basin for any water quality limited parameter, this permit may be re-opened to establish new limits and/or new conditions or requirements in accordance with any Waste Load Allocation (WLA) assigned to this source by the TMDL.

SCHEDULE B

1. **Minimum Monitoring and Reporting Requirements** (unless otherwise approved in writing by the Department).

The permittee shall monitor the parameters as specified below at the locations indicated. The laboratory used by the permittee to analyze samples shall have a quality assurance/quality control (QA/QC) program to verify the accuracy of sample analysis. If QA/QC requirements are not met for any analysis, the results shall be included in the report, but not used in calculations required by this permit. When possible, the permittee shall re-sample in a timely manner for parameters failing the QA/QC requirements, analyze the samples, and report the results.

a. Influent

The facility influent sampling locations are the following:

Influent samples and measurements are taken just after the Parshall Flume and just before flowing by gravity through an open air rocky rip-rap channel to the first lagoon cell.

Item or Parameter	Minimum Frequency	Type of Sample
Total Flow (MGD)	Daily	Measurement
Flow Meter Calibration	Annually	Verification
BOD_5	Weekly	Composite
TSS	Weekly	Composite
pH	3/Week	Grab

b. Treated Effluent Outfall 001

The facility effluent sampling locations are the following:

* Effluent flow measurements are taken from just before entering the chlorine contact chamber. Effluent grab samples are collected just after the chlorine contact chamber.

Item or Parameter	Minimum Frequency	Type of Sample
Total Flow (MGD)	Daily	Measurement
Flow Meter Calibration	Annually	Verification
BOD_5	Weekly	Composite
TSS	Weekly	Composite
pH	3/Week	Grab
E. coli	Weekly	Grab (See Note 1)
Quantity Chlorine Used	Daily	Measurement
Chlorine Residual	Daily	Grab
Pounds Discharged (BOD_5 and TSS)	Weekly	Calculation
Average Percent Removed (BOD_5 and TSS)	Monthly	Calculation
Iron	Annually in January (See Note 2)	Grab
Mercury	Annually in January (See Note 3)	Grab
Dissolved Oxygen	Monthly when Discharging (See Note 4)	Grab
Ammonia	Monthly when Discharging (See Note 4)	Grab

c. Temperature Monitoring

Item or Parameter	Minimum Frequency	Type of Sample
Effluent Temperature, Daily Max	2/Week	Grab
Excess Thermal Load October 15 – May 15	Weekly	Calculation (See Note 5)

2. **Reporting Procedures**

a. Monitoring results shall be reported on approved forms. The reporting period is the calendar month. Reports must be submitted to the Department's Western Region - Salem office by the 15th day of the following month.

b. State monitoring reports shall identify the name, certificate classification and grade level of each principal operator designated by the permittee as responsible for supervising the wastewater collection and treatment systems during the reporting period. Monitoring reports shall also identify each system classification as found on page one of this permit.

c. Monitoring reports shall also include a record of the quantity and method of use of all sludge removed from the treatment facility and a record of all applicable equipment breakdowns and bypassing.

3. **Report Submittals**

a. The permittee shall have in place a program to identify and reduce inflow and infiltration into the sewage collection system. An annual report shall be submitted to the Department by February 1 each year which details sewer collection maintenance activities that reduce inflow and infiltration. The report shall state those activities that have been done in the previous year and those activities planned for the following year.

NOTES:

1. *E. coli* monitoring must be conducted according to any of the following test procedures as specified in **Standard Methods for the Examination of Water and Wastewater, 19th Edition**, or according to any test procedure that has been authorized and approved in writing by the Director or an authorized representative:

Method	Reference	Page	Method Number
mTEC agar, MF	Standard Methods, 18th Edition	9-29	9213 D
NA-MUG, MF	Standard Methods, 19th Edition	9-63	9222 G
Chromogenic Substrate, MPN	Standard Methods, 19th Edition	9-65	9223 B
Colilert QT	Idexx Laboratories, Inc.		

2. The permittee shall monitor for iron annually in January for four consecutive sampling events. A data analysis report shall be submitted with the next permit renewal application in accordance with Schedule D, Condition 5 of this permit. Effluent monitoring for iron shall be conducted using a test method with a detection limit of 0.1 mg/L or less.

3. The permittee shall monitor mercury annually in January for two consecutive sampling events. Monitoring for mercury shall be conducted in accordance with EPA Method 1631. After two sampling events, mercury monitoring may be discontinued unless otherwise notified in writing by the Department. A data analysis report shall be submitted with the next permit renewal application in accordance with Schedule D, Condition 5 of this permit.

4. Ammonia and Dissolved Oxygen monitoring will be performed monthly during the discharge season to determine the impact on the dissolved oxygen of the receiving stream. If the Department determines that there is an impact on the dissolved oxygen concentration in the receiving stream, the Department may re-open the permit to include an ammonia limit in Schedule A or other conditions or requirements. Ammonia and Dissolved Oxygen monitoring may be discontinued after one full discharge season unless otherwise notified in writing by the Department. The Department will make its determination based on whether or not the discharge is contributing to the depletion of dissolved oxygen in the receiving stream.

5. The seven day average Excess Thermal Load (ETL) shall be calculated based on the weekly average effluent temperature and flow and the applicable temperature criteria as follows:

   June 1- October 31
   ETL = average effluent flow (MGD) x (average effluent temperature °C – 13 °C) x 3.785 = Thermal load, in million kcals/day.

SCHEDULE C

Compliance Schedules and Conditions

1. Six (6) months prior to the removal of accumulated solids from the lagoon, the permittee shall submit to the Department a revised biosolids management plan developed in accordance with Oregon Administrative Rule 340, Division 50, "Land Application of Domestic Wastewater Treatment Facility Biosolids, Biosolids Derived Products, and Domestic Septage". Upon approval of the plan by the Department, the plan shall be implemented by the permittee.

2. The permittee is expected to meet the compliance dates which have been established in this schedule. Either prior to or no later than 14 days following any lapsed compliance date, the permittee shall submit to the Department a notice of compliance or noncompliance with the established schedule. The Director may revise a schedule of compliance if he/she determines good and valid cause resulting from events over which the permittee has little or no control.

SCHEDULE D

Special Conditions

1. An adequate contingency plan for prevention and handling of spills and unplanned discharges shall be in force at all times. A continuing program of employee orientation and education shall be maintained to ensure awareness of the necessity of good in-plant control and quick and proper action in the event of a spill or accident.

2. All biosolids shall be managed in accordance with the current, DEQ approved biosolids management plan, and the site authorization letters issued by the DEQ. Any changes in solids management activities that significantly differ from operations specified under the approved plan require the prior written approval from DEQ.

   All new Class B biosolids applications sites shall meet the site selection and nutrient loading criteria set forth in OAR 340-050-0070 and OAR 340-050-0080.

   This permit may be modified to incorporate any applicable standard for biosolids use or disposal promulgated under section 405(d) of the Clean Water Act, if the standard for biosolids use or disposal is more stringent than any requirements for biosolids use or disposal in the permit, or controls a pollutant or practice not limited in this permit.

3. The permittee shall comply with Oregon Administrative Rules (OAR), Chapter 340, Division 49, "Regulations Pertaining To Certification of Wastewater System Operator Personnel" and accordingly:

   a. The permittee shall have its wastewater system supervised by one or more operators who are certified in a classification <u>and</u> grade level (equal to or greater) that corresponds with the classification (collection and/or treatment) of the system to be supervised as specified on page one of this permit.

Note: A "supervisor" is defined as the person exercising authority for establishing and executing the specific practice and procedures of operating the system in accordance with the policies of the permittee and requirements of the waste discharge permit. "Supervise" means responsible for the technical operation of a system, which may affect its performance or the quality of the effluent produced. Supervisors are not required to be on-site at all times.

   b. The permittee's wastewater system may not be without supervision (as required by Special Condition 3.a. above) for more than thirty (30) days. During this period, and at any time that the supervisor is not available to respond on-site (i.e. vacation, sick leave or off-call), the permittee must make available another person who is certified in the proper classification <u>and</u> at grade level I or higher.

   c. The permittee is responsible for ensuring the wastewater system has a properly certified supervisor available at all times to respond on-site at the request of the permittee and to any other operator.

   d. The permittee shall notify the Department of Environmental Quality in writing within thirty (30) days of replacement or re-designation of certified operators responsible for supervising wastewater system operation. The notice shall be filed with the Water Quality Division, Operator Certification Program, 811 SW 6th Ave, Portland, OR 97204. This requirement is in addition to the reporting requirements contained under Schedule B of this permit.

   e. Upon written request, the Department may grant the permittee reasonable time, not to exceed 120 days, to obtain the services of a qualified person to supervise the wastewater system. The written request must include justification for the time needed, a schedule for recruiting and hiring, the date the system supervisor availability ceased and the name of the alternate system supervisor(s) as required by 3.b. above.

4. The permittee shall not be required to perform a hydrogeologic characterization or groundwater monitoring during the term of this permit provided:

   a. The facilities are operated in accordance with the permit conditions, and;

   b. There are no adverse groundwater quality impacts (complaints or other indirect evidence) resulting from the facility's operation.

   If warranted, at permit renewal the Department may evaluate the need for a full assessment of the facilities impact on groundwater quality.

5. The permittee shall monitor for iron annually in January for four consecutive sampling events. The permittee shall monitor for mercury annually in January for two consecutive sampling events. A data analysis report shall be submitted with the next permit renewal application.

6. The permittee shall notify the DEQ Western Region - Salem Office (phone: (503) 378-8240) in accordance with the response times noted in the General Conditions of this permit, of any malfunction so that corrective action can be coordinated between the permittee and the Department.

NPDES GENERAL CONDITIONS
(SCHEDULE F)

SECTION A. STANDARD CONDITIONS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of Oregon Revised Statutes (ORS) 468B.025 and is grounds for enforcement action; for permit termination, suspension, or modification; or for denial of a permit renewal application.

2. Penalties for Water Pollution and Permit Condition Violations

Oregon Law (ORS 468.140) allows the Director to impose civil penalties up to $10,000 per day for violation of a term, condition, or requirement of a permit.

In addition, a person who unlawfully pollutes water as specified in ORS 468.943 or ORS 468.946 is subject to criminal prosecution.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. In addition, upon request of the Department, the permittee shall correct any adverse impact on the environment or human health resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

4. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and have the permit renewed. The application shall be submitted at least 180 days before the expiration date of this permit.

The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

5. Permit Actions

This permit may be modified, suspended, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any term, condition, or requirement of this permit, a rule, or a statute;

b. Obtaining this permit by misrepresentation or failure to disclose fully all material facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

The filing of a request by the permittee for a permit modification or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

6. Toxic Pollutants

The permittee shall comply with any applicable effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

7. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege.

8. Permit References

Except for effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and standards for sewage sludge use or disposal established under Section 405(d) of the Clean Water Act, all rules and statutes referred to in this permit are those in effect on the date this permit is issued.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls, and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Duty to Halt or Reduce Activity

For industrial or commercial facilities, upon reduction, loss, or failure of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass" means intentional diversion of waste streams from any portion of the treatment facility. The term "bypass" does not include nonuse of singular or multiple units or processes of a treatment works when the nonuse is insignificant to the quality and/or quantity of the effluent produced by the treatment works. The term "bypass" does not apply if the diversion does not cause effluent limitations to be exceeded, provided the diversion is to allow essential maintenance to assure efficient operation.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities or treatment processes which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Prohibition of bypass.

(1) Bypass is prohibited unless:

(a) Bypass was necessary to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and

(c) The permittee submitted notices and requests as required under General Condition B.3.c.

(2) The Director may approve an anticipated bypass, after considering its adverse effects and any alternatives to bypassing, when the Director determines that it will meet the three conditions listed above in General Condition B.3.b.(1).

c. Notice and request for bypass.

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior written notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in General Condition D.5.

4. Upset

a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operation error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of General Condition B.4.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the causes(s) of the upset;

(2) The permitted facility was at the time being properly operated;

(3) The permittee submitted notice of the upset as required in General Condition D.5, hereof (24-hour notice); and

(4) The permittee complied with any remedial measures required under General Condition A.3 hereof.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

5. Treatment of Single Operational Event

For purposes of this permit, A Single Operational Event which leads to simultaneous violations of more than one pollutant parameter shall be treated as a single violation. A single operational event is an exceptional incident which causes simultaneous, unintentional, unknowing (not the result of a knowing act or omission), temporary noncompliance with more than one Clean Water Act effluent discharge pollutant parameter. A single operational event does not include Clean Water Act violations involving discharge without a NPDES permit or noncompliance to the extent caused by improperly designed or inadequate treatment facilities. Each day of a single operational event is a violation.

6. Overflows from Wastewater Conveyance Systems and Associated Pump Stations

a. Definitions

(1) "Overflow" means the diversion and discharge of waste streams from any portion of the wastewater conveyance system including pump stations, through a designed overflow device or structure, other than discharges to the wastewater treatment facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the conveyance system or pump station which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of an overflow.

(3) "Uncontrolled overflow" means the diversion of waste streams other than through a designed overflow device or structure, for example to overflowing manholes or overflowing into residences, commercial establishments, or industries that may be connected to a conveyance system.

b. Prohibition of overflows. Overflows are prohibited unless:

(1) Overflows were unavoidable to prevent an uncontrolled overflow, loss of life, personal injury, or severe property damage;

(2) There were no feasible alternatives to the overflows, such as the use of auxiliary pumping or conveyance systems, or maximization of conveyance system storage; and

(3) The overflows are the result of an upset as defined in General Condition B.4. and meeting all requirements of this condition.

c. Uncontrolled overflows are prohibited where wastewater is likely to escape or be carried into the waters of the State by any means.

d. Reporting required. Unless otherwise specified in writing by the Department, all overflows and uncontrolled overflows must be reported orally to the Department within 24 hours from the time the permittee becomes aware of the overflow. Reporting procedures are described in more detail in General Condition D.5.

7. Public Notification of Effluent Violation or Overflow

If effluent limitations specified in this permit are exceeded or an overflow occurs, upon request by the Department, the permittee shall take such steps as are necessary to alert the public about the extent and nature of the discharge. Such steps may include, but are not limited to, posting of the river at access points and other places, news releases, and paid announcements on radio and television.

8. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in such a manner as to prevent any pollutant from such materials from entering public waters, causing nuisance conditions, or creating a public health hazard.

SECTION C. MONITORING AND RECORDS

1. Representative Sampling

Sampling and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and shall be taken, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director.

2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ± 10 percent from true discharge rates throughout the range of expected discharge volumes.

3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

4. Penalties of Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than two years, or by both. If a conviction of a person is for a violation committed after a first conviction of such person, punishment is a fine not more than $20,000 per day of violation, or by imprisonment of not more than four years or both.

5. Reporting of Monitoring Results

Monitoring results shall be summarized each month on a Discharge Monitoring Report form approved by the Department. The reports shall be submitted monthly and are to be mailed, delivered or otherwise transmitted by the 15th day of the following month unless specifically approved otherwise in Schedule B of this permit.

6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report. Such increased frequency shall also be indicated. For a pollutant parameter that may be sampled more than once per day (e.g., Total Chlorine Residual), only the average daily value shall be recorded unless otherwise specified in this permit.

7. Averaging of Measurements

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean, except for bacteria which shall be averaged as specified in this permit.

8. Retention of Records

Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records of all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

9. Records Contents

Records of monitoring information shall include:

a. The date, exact place, time and methods of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. The date(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques or methods used; and

f. The results of such analyses.

10. Inspection and Entry

The permittee shall allow the Director, or an authorized representative upon the presentation of credentials to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, and

d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by state law, any substances or parameters at any location.

SECTION D. REPORTING REQUIREMENTS

1. Planned Changes

The permittee shall comply with Oregon Administrative Rules (OAR) 340, Division 52, "Review of Plans and Specifications". Except where exempted under OAR 340-52, no construction, installation, or modification involving disposal systems, treatment works, sewerage systems, or common sewers shall be commenced until the plans and specifications are submitted to and approved by the Department. The permittee shall give notice to the Department as soon as possible of any planned physical alternations or additions to the permitted facility.

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers

This permit may be transferred to a new permittee provided the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of the permit and the rules of the Commission. No permit shall be transferred to a third party without prior written approval from the Director. The permittee shall notify the Department when a transfer of property interest takes place.

4. Compliance Schedule

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

5. Twenty-Four Hour Reporting

The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally (by telephone) within 24 hours, unless otherwise specified in this permit, from the time the permittee becomes aware of the circumstances. During normal business hours, the Department's Regional office shall be called. Outside of normal business hours, the Department shall be contacted at 1-800-452-0311 (Oregon Emergency Response System).

A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. If the permittee is establishing an affirmative defense of upset or bypass to any offense under ORS 468.922 to 468.946, and in which case if the original reporting notice was oral, delivered written notice must be made to the Department or other agency with regulatory jurisdiction within 4 (four) calendar days. The written submission shall contain:

a. A description of the noncompliance and its cause;

b. The period of noncompliance, including exact dates and times;

c. The estimated time noncompliance is expected to continue if it has not been corrected;

d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and

e. Public notification steps taken, pursuant to General Condition B.7.

The following shall be included as information which must be reported within 24 hours under this paragraph:

a. Any unanticipated bypass which exceeds any effluent limitation in this permit.

b. Any upset which exceeds any effluent limitation in this permit.

c. Violation of maximum daily discharge limitation for any of the pollutants listed by the Director in this permit.

The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

6. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under General Condition D.4 or D.5, at the time monitoring reports are submitted. The reports shall contain:

a. A description of the noncompliance and its cause;

b. The period of noncompliance, including exact dates and times;

c. The estimated time noncompliance is expected to continue if it has not been corrected; and

d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

7. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

Other Information: When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Department, it shall promptly submit such facts or information.

8. Signatory Requirements

All applications, reports or information submitted to the Department shall be signed and certified in accordance with 40 CFR 122.22.

9. Falsification of Information

A person who supplies the Department with false information, or omits material or required information, as specified in ORS 468.953 is subject to criminal prosecution.

10. Changes to Indirect Dischargers - **[Applicable to Publicly Owned Treatment Works (POTW) only]**

The permittee must provide adequate notice to the Department of the following:

a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the Clean Water Act if it were directly discharging those pollutants and;

b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

c. For the purposes of this paragraph, adequate notice shall include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

11. Changes to Discharges of Toxic Pollutant - **[Applicable to existing manufacturing, commercial, mining, and silvicultural dischargers only]**

The permittee must notify the Department as soon as they know or have reason to believe of the following:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:

(1) One hundred micrograms per liter (100 □g/L);

(2) Two hundred micrograms per liter (200 □g/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 □g/L) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

(3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

(4) The level established by the Department in accordance with 40 CFR 122.44(f).

b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) Five hundred micrograms per liter (500 □g/L);

(2) One milligram per liter (1 mg/L) for antimony;

(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

(4) The level established by the Department in accordance with 40 CFR 122.44(f).

SECTION E. DEFINITIONS

1. BOD means five-day biochemical oxygen demand.

2. TSS means total suspended solids.

3. mg/L means milligrams per liter.

4. kg means kilograms.

5. m^3/d means cubic meters per day.

6. MGD means million gallons per day.

7. Composite sample means a sample formed by collecting and mixing discrete samples taken periodically and based on time or flow.

8. FC means fecal coliform bacteria.

9. Technology based permit effluent limitations means technology-based treatment requirements as defined in 40 CFR 125.3, and concentration and mass load effluent limitations that are based on minimum design criteria specified in OAR 340-41.

10. CBOD means five day carbonaceous biochemical oxygen demand.

11. Grab sample means an individual discrete sample collected over a period of time not to exceed 15 minutes.

12. Quarter means January through March, April through June, July through September, or October through December.

13. Month means calendar month.

14. Week means a calendar week of Sunday through Saturday.

15. Total residual chlorine means combined chlorine forms plus free residual chlorine.

16. The term "bacteria" includes but is not limited to fecal coliform bacteria, total coliform bacteria, and E. coli bacteria.

17. POTW means a publicly owned treatment works.

FACT SHEET
And
NPDES WASTEWATER DISCHARGE PERMIT EVALUATION
March 25, 2004
Department of Environmental Quality
Western Region – Salem Office
750 Front Street NE, Suite 120, Salem, OR 97301-1039
Telephone: (503) 378-8240

PERMITTEE:	City of Independence PO Box 7 Independence, OR 97351 **File Number: 41513**
SOURCE LOCATION:	End of Williams Street, Independence, Oregon
SOURCE CONTACT:	Ken Perkins Telephone Number: 503-838-1212
PERMIT WRITER:	Robert A. Dicksa Telephone Number: 503-378-8240, ext. 246
PROPOSED ACTION:	Renewal of a National Pollutant Discharge Elimination System (NPDES) wastewater discharge permit
SOURCE CATEGORY:	Minor Domestic
TREATMENT SYSTEM CLASS:	Level I
COLLECTION SYSTEM CLASS:	Level II
PERMIT APPLICATION DATE:	May 28, 1999
PERMIT APPLICATION NUMBER:	990232

BACKGROUND

Introduction

The City of Independence owns and operates a wastewater treatment facility located in Independence, Oregon **(See Attachment 1)**. Wastewater is treated and discharged to the Willamette River in accordance with National Pollutant Discharge Elimination System (NPDES) Permit number 101217. The Permit for the facility was issued on August 10, 1994 and expired on May 31, 1999.

The Department received a renewal application on May 28, 1999. A renewal permit is necessary to discharge to state waters pursuant to provisions of Oregon Revised Statutes (ORS) 468B.050 and the Federal Clean Water Act. The Department proposes to renew the permit.

Facility Description

The wastewater collection system consists of a series of pump stations and force mains that convey the sewage to the head works. The wastewater treatment system consists of four lagoon cells with a total surface acreage of approximately 52 acres. The South side of the collection system consists of a series of pump stations and force mains to convey sewage to a single pump station located at the south end of the lagoon cells near the chlorine contact chamber which then pumps sewage to the influent head works. The north and east sides of town also consists of a series of pump stations to convey sewage to another pump station located at the north end of the treatment works which then pumps the sewage into the head works. The sewage flows through a head works that consists of a 12" Parshall flume and flow meter and equipped with a composite auto sampler for sample collection.

The sewage flows into cell number one and the system can be operated in series, or it can flow into both cell number one and number two and the system can be operated in parallel for primary treatment. The system usually runs in series. The influent sewage flows by gravity down a rocky rip-rap channel into cell number one, a facultative primary lagoon. Flow from lagoon cell number one must be pumped to lagoon cell number two. From cell two to three and three to four, the transfer flow is by gravity. From cell number four the treated water then flows by gravity through a Parshall flume and flow meter and then into a chlorine contact chamber for disinfection by gaseous chlorine and then discharge by gravity to the Willamette River. The discharge does not have a composite auto sampler for sample collection. The outfall pipeline to the Willamette River is approximately 1 and ½ mile long and is shared with the City of Monmouth.

Flows received are primarily domestic and commercial sewage with no significant industrial wastes involved. Currently the plant serves the residents and businesses of the City of Independence. The facility was upgraded in 1997. One new pump station was added, three were completely rebuilt and the six others were upgraded with standby power generators. The City also has several mobile generators that can be utilized for back up power as needed at the other pump stations. In addition, several thousand feet of sewer pipeline was replaced and the entire head works and chlorine contact chamber were completely rebuilt.

Biosolids Management and Utilization

Waste sludge accumulates in the treatment lagoon. A Biosolids Management Plan must be submitted six months prior to removing any biosolids from the lagoon. It is anticipated that biosolids will be land applied at agronomic rates after approval of the application sites and the revised biosolids management plan by the Department.

No beneficial land application will be allowed under this permit until a Biosolids Management Plan is submitted by the permittee and is approved by the Department. The Biosolids

Management Plan will ensure compliance with the federal biosolids regulations (40 CFR Part 503).

Pretreatment

The permittee does not have a formal pretreatment program nor is one required for this source. The permittee conducted an onsite inspection of the Medallion Cabinet Shop located within the City limits on March 22, 2004. The cabinet shop does not discharge any industrial process wastewater to the municipal wastewater treatment system. All process waste is put into sealed drums and removed off site to Kentucky and recovered.

Pollutants Discharged

The current permit allows the City of Independence to discharge treated effluent from the wastewater treatment plant from November 1 though May 31 each year. The current permit sets limits on the following pollutants: Five-day Biochemical Oxygen Demand (BOD5), Total Suspended Solids (TSS), Total Residual Chlorine and Fecal Coliform (FC) bacteria. The discharge is also regulated for pH and pollutant removal efficiency.

The proposed permit allows for discharges to the Willamette River from November through May each year. The permit sets limits on the following pollutants: BOD_5, TSS, Total Residual Chlorine, and *E. coli* Bacteria. The discharge will also be regulated for pH and pollutant removal efficiency. A new permit limit on Excess Thermal Load will be applied from October 15 through May 15 each year. The proposed permit prohibits discharges to public waters from June 1 through October 31, each year.

Outfalls

During the winter months, all wastewater discharged from the wastewater treatment plant is discharged through Outfall 001. The outfall pipeline is shared with the City of Monmouth who also discharges treated wastewater effluent to the Willamette River at River Mile (RM) 95.5.

Receiving Streams/Impact

The water quality standards for the Willamette Basin (Oregon Administrative Rules 340-041) were developed to protect the beneficial uses for the basin. Treated wastewater is discharged to the Willamette River at RM 95.5. At this location, the Willamette River is water quality limited for Temperature in Summer, Iron Year Around, Fecal Coliform Bacteria in Winter, Spring, and Fall, Mercury in Fish Tissue Year Around, and Dissolved Oxygen from October 1 through May 31 according to the Department's 303(d) list.

Discharges of disinfected wastewater that are in compliance with the permit should not have a significant impact on compliance with in-stream bacterial standards. The permit does not allow discharges during the summer period when the temperature standard is violated. The Department will require ammonia monitoring on a monthly basis for a period of one year to determine if the wastewater effluent is impacting the dissolved oxygen of the receiving stream. At the end of the

year period, the Department will make an assessment of the collected data to determine if there is a potential for impact and re-open the permit as necessary. A waste load allocation for dissolved oxygen in the receiving stream will be developed at a future date. However, it is unlikely that the wastewater discharge will contribute to the degradation of the in-stream dissolved oxygen. The Department will also require annual monitoring for Iron for a period of four years and mercury for two years. Mercury monitoring must be performed in accordance with EPA Method 1631. A report of the findings will be required to be submitted with the next permit renewal application. If the Department analysis of the data determines that there is an impact from the effluent for Iron, then a permit limit will be established in the next permit.

The proposed permit includes a note allowing the Department to re-open the permit to establish new limits and/or new conditions or requirements in accordance with any Waste Load Allocation (WLA) assigned to this source by a Total Maximum Daily Load (TMDL). The Department is not aware of any water quality violations that may be attributable to this source.

Temperature

According to the Fish Use Designation maps approved with the new temperature standard, salmon and steelhead spawning is a designated use of the Willamette River from October 15 – May 15. The applicable numeric temperature criterion during this period is 13 °C. During the remainder of the year, salmon and trout rearing and migration is a designated use. The applicable numeric temperature criterion is 18 °C during this period.

The Department's List of Water Quality Limited Water Bodies (also called the 303(d) List) for 2002 indicates the Willamette River is not water quality limited for temperature during the winter. In order to protect cold water, a point source may not increase the stream temperature (after complete mixing of the effluent) more than 0.5 degrees Celsius above the ambient temperature (OAR 340-041-0028(11)(b)).

The Department calculated Thermal Load limits based on the stream flow as required by the rule (OAR 340-041-0028(11)(b)). The thermal load that would raise the stream flow by the allowable temperature increase was calculated as follows:

7600 cfs spawning period 7Q10 flow ÷ 1.547 = 4913 MGD.

4913MGD X 3.785 X 0.5 °C allowable temperature increase = 9297 million kcals/day

This thermal load was compared to the maximum thermal discharge that is currently expected to occur with the existing facility design flow and effluent temperatures. The current thermal load calculation was based on the weekly average dry weather design (monthly average dry weather design flow times 1.5) and the difference between the weekly average of daily maximum effluent temperature and the numeric criteria as follows:

2.0 DADWF (MGD) X 1.5 X 3.785 X (15 °C effluent temperature - 13 °C numeric criteria = 22.7 million kcals/day.

Based on the current maximum thermal load, this facility has no reasonable potential to exceed the water quality based thermal load. Therefore, an Excess Thermal Load limit has not been included in this permit. **See Attachment 3** for all of the calculations.

If the Total Maximum Daily Load (TMDL) for temperature for this sub-basin assigns a Waste Load Allocation (WLA) to this source, this permit may be re-opened to establish new thermal load limits and/or new temperature conditions or requirements.

Groundwater

Based on the Department's current information, this facility has a low potential for adversely impacting groundwater quality **(See Attachment 2)** Therefore, Schedule D of the proposed permit states that no groundwater evaluations will be required during this permit cycle. The permit also includes a condition in Schedule A that prohibits any adverse impact on groundwater quality.

Stormwater

Stormwater is not addressed in this permit. General NPDES permits for stormwater are not required for facilities with a design flow of less than 1 MGD.

Compliance History

This facility was last inspected on February 2, 2004, and was found to be operating in compliance with one exception. The facility received a Class II Notice of Noncompliance (NON) for failure to get DEQ plan approval for installation of a treatment aeration device. The DEQ compliance inspector is working with the City to correct this violation. The monitoring reports for this facility were reviewed for the period since the current permit was issued, including any actions taken relating to effluent violations. The permit compliance conditions were reviewed and all inspection reports for the same period were reviewed. Based on this review, the following violations have been documented at this facility during the term of the current permit.

Date of Violation	Type of Enforcement Action	Description of Violation
June 30, 2003	Notice of noncompliance	Class II for not meeting the Percent Removal effluent limit.

The above violation is considered to be minor and has been corrected. Therefore, the Department considers this facility to be in substantial compliance with the terms of the current permit.

PERMIT DISCUSSION

Face Page

The permittee is authorized to construct, install, modify, or operate a wastewater collection, treatment, control and disposal system. Permits discharge of treated effluent to the Willamette River within limits set by Schedule A and the following schedules. All other discharges are prohibited. The treatment system is classified as Level I. The collection system is classified as Level II. **(See Attachment 4).**

Schedule A - Waste Discharge limitations

BOD and TSS concentration and mass limits.

Based on the Willamette Basin minimum design criteria, a minimum of secondary treatment or equivalent control is required during periods of high stream flow (generally from November 1 - April 30). Secondary treatment is generally defined as monthly average concentration limit of 30 mg/L for BOD_5 and TSS. However, the federal secondary treatment standards (40 CFR 133.103(c)) allow states to give lagoons special consideration in setting concentration limit for TSS. Secondary treatment for this facility is defined as monthly average concentration limit of 30 mg/L for BOD5 (or 25 mg/L for CBOD5) and 50 mg/L for TSS.

The Department is proposing concentration limits at least as stringent as the basin minimum design criteria. The proposed monthly average BOD5 concentration limit is 30 mg/L with a weekly average limit of 45 mg/L. The proposed monthly average TSS concentration limit is 50 mg/L with a weekly average limit of 80 mg/L.

The winter mass load limits for the facility are based on the design AWWF of 2.0 MGD and the monthly average BOD_5 or TSS concentration limits of 30 mg/L and 50 mg/L, respectively. The limits are in accordance with OAR 340-041-0061(10)(a). All mass load limitations are rounded to two significant figures.

By basing the winter mass limits on AWWF, the permittee is required to remove all inflow sources from the collection system. The proposed permit includes a Schedule C condition requiring submittal of a program and time schedule for identifying and removing inflow.

BOD_5 and TSS

The limits are:

(1) June 1 - October 31:

No discharge to state waters is permitted.

(2) November 1 - May 31:

Parameter	Average Effluent Concentrations Monthly	Weekly	Monthly Average lb/day	Weekly Average lb/day	Daily Maximum Lbs
BOD_5	30 mg/L	45 mg/L	500	750	1000
TSS	50 mg/L	80 mg/L	830	1200	1700

Calculations:

(1) BOD_5

(a) 2.0 MGD x 8.34 #/gal x 30 mg/L monthly avg. = 500 lbs/day
(b) 500 lbs/day monthly avg. x 1.5 = 750 lbs/day weekly avg.
(c) 500 lbs/day monthly avg. x 2.0 = 1000 lbs/day daily max.

(2) TSS

(a) 2.0 MGD x 8.34 #/gal x 50 mg/L monthly avg. = 830 lbs/day
(b) 830 lbs/day monthly avg. x 1.5 = 1200 lbs/day weekly avg.
(c) 830 lbs/day monthly avg. x 2.0 = 1700 lbs/day daily max.

A review of recent monitoring data indicates the City should generally be able to comply with the permit limits. No changes from the previous permit are proposed.

BOD and TSS Percent Removal Efficiency

A minimum level of percent removal for BOD5 and TSS for municipal dischargers is required by the Code of Federal Regulations (CFR) secondary treatment standards (40 CFR, Part 133). In accordance with the federally approved standards for Oregon under 40 CFR 133.105, certain types of treatment facilities (including trickling filters and facultative lagoons) are eligible for consideration of lower percent removal limits. The proposed permit requires a minimum monthly average BOD_5 removal efficiency of 85 percent and a monthly average TSS removal efficiency of 65 percent.

pH

The Willamette Basin Water Quality Standard for pH is found in OAR 340-041. The allowed range is 6.5 to 8.5. The proposed permit limits pH to the range 6.0 to 9.0. This limit is based on Federal wastewater treatment guidelines for sewage treatment facilities, and is applied to the majority of NPDES permittees in the state. Within the permittee's mixing zone, the water quality standard for pH does not have to be met. It is the Department's belief that mixing with ambient water within the mixing zone will ensure that the pH at the edge of the mixing zone meets the standard, and the Department considers the proposed permit limits to be protective of the water quality standard.

Ammonia

A low flow analysis for the month of November for the Willamette River was done using flow data from the USGS gauging station number 14174000 (Willamette River at Albany, Oregon). The flow data period of record for the Willamette River was from October 1, 1965, to September 30, 2002. The November 7Q10 (lowest average week flow for a ten year return period) was calculated to be 5960 cubic feet per second (cfs) or 3852 MGD. The combined discharge flow rate with the City of Monmouth is 3.9 MGD. The available dilution was estimated using 25 percent of the receiving stream for the Regulatory Mixing Zone (RMZ) and 10 percent of the receiving stream for the Zone of Immediate Dilution (ZID). During the winter discharge period, a dilution of 89:1 within the ZID and 248:1 at the edge of the RMZ was calculated. The available dilutions were used to perform a reasonable potential analysis for ammonia **(See Attachment 5)**. The analysis indicated there was no reasonable potential for ammonia to cause acute and chronic toxicity within the receiving stream. Therefore, no ammonia limits will be required in the proposed permit at this time. However, the Department will require ammonia monitoring on a monthly basis for a period of one year to determine if the wastewater effluent is impacting the dissolved oxygen of the receiving stream. At the end of the year period, the Department will make an assessment of the collected data to determine if there is a potential for impact and re-open the permit as necessary. A waste load allocation for dissolved oxygen in the receiving stream will be developed at a future date. It is unlikely that the wastewater discharge will contribute to the degradation of the in stream dissolved oxygen.

Bacteria

The proposed permit limits are based on an E. coli standard approved in January 1996. The proposed limits are a monthly geometric mean of 126 E. coli per 100 mL, with no single sample exceeding 406 E. coli per 100 mL. The new bacteria standard allows that if a single sample exceeds 406 E coli per 100 mL, then the permittee may take five consecutive re-samples. If the log mean of the five re-samples is less than or equal to 126, a violation is not triggered. The new rule states that the re-samples should be taken at four hour intervals beginning as soon as practicable (preferably within 28 hours) after the original sample was taken. The rule also allows for changing the re-sampling timeframe if it would pose an undue hardship on the treatment facility. After discussions with the permittee, the Department is proposing that the five re-samples be taken beginning no later than 48 hours after the original sample was taken.

The proposed effluent limits are achievable through proper operation and maintenance.

Chlorine Residual

Disinfection of the effluent with chlorine is the process the permittee uses to comply with the waste discharge limitations for bacteria. Chlorine is a known toxic substance and as such is subject to limitation under Oregon Administrative Rules. The rule (OAR 340-041-0033(1) states in part that toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations that may be harmful, may chemically change to harmful forms in the environment, or may adversely affect public health,

safety or welfare, aquatic life, wildlife, or other designated beneficial uses. In addition, levels of toxic substances shall not exceed the criteria listed in Table 20 which were based on criteria established by the EPA and published in Quality Criteria for Water (1986), unless otherwise noted. The Table 20 fresh water quality chronic chlorine standard is 0.011 mg/l and the acute standard is 0.019 mg/l.

However, OAR 340-041-0053(1) states that the Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone. The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided the water within the mixing zone is free of materials in concentrations that will cause acute toxicity to aquatic life as measured by the acute bioassay method and outside the boundary of the mixing zone is free of materials in concentrations that will cause chronic toxicity.

Furthermore, 40 CFR §122.44(d) states that permit limitations must control all pollutants or pollutant parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality. The fresh water criteria for chlorine were used to calculate permit limitations. According to OAR 340-041, Table 20, chlorine concentrations of 11 µg/L can result in chronic toxicity in fresh waters while 19 µg/L can result in acute chlorine toxicity in fresh waters.

Compliance with acute toxicity criteria is required at the edge of the ZID and compliance with chronic toxicity criteria is required at the edge of the RMZ. If chlorine may be discharged at a concentration which will cause, have the reasonable potential to cause, or contribute to a violation of any water quality standard, it must be limited by the permit.

The low flow analysis for the month of November for the Willamette River was also used to determine the reasonable potential analysis for chlorine **(See Attachment 5).** The analysis indicated that there was no reasonable potential for chlorine to cause toxicity within the receiving stream. However, the proposed permit will contain a Total Residual Chlorine limit 1.0 mg/l as in the previous permit. Total Residual Chlorine and the amount of chlorine used, must be monitored daily.

<u>Mixing Zone and Zone of Immediate Dilution</u>

The allowable mixing zone is that portion of the Willamette River contained within a band extending out fifty (50) feet from the west bank of the river and extending from a point fifty (50) feet upstream of the outfall to a point three-hundred (300) feet downstream from the outfall. The Zone of Immediate Dilution (ZID) shall be defined as that portion of the allowable mixing zone that is within thirty (30) feet of the point of discharge.

The Department believes that the beneficial uses of the receiving stream will not be affected by the discharge and this mixing zone and that the defined mixing zone meets the criteria in the rule.

Schedule B - Minimum Monitoring and Reporting Requirements

In 1988, the Department developed a monitoring matrix for commonly monitored parameters. Proposed monitoring frequencies for all parameters are based on this matrix and, in some cases, may have changed from the current permit. The proposed monitoring frequencies for all parameters correspond to those of facilities of similar size and complexity in the state.

The permittee is required to have a laboratory Quality Assurance/Quality Control program. The Department recognizes that some tests do not accurately reflect the performance of a treatment facility due to quality assurance/quality control problems. These tests should not be considered when evaluating the compliance of the facility with the permit limitations. Thus, the Department is also proposing to include in the opening paragraph of Schedule B a statement recognizing that some test results may be inaccurate, invalid, do not adequately represent the facility's performance and should not be used in calculations required by the permit.

Daily monitoring of influent and effluent flow is required in this permit. In addition, calibration of the flow meters are required on an annual basis.

Monitoring for *E. coli* must be performed in accordance with one of the methods approved by the Department.

Discharge monitoring reports must be submitted to the Department monthly by the 15th day of the following month. The monitoring reports need to identify the principal operators designated by the Permittee to supervise the treatment and collection systems. The reports must also include records concerning application of biosolids and all applicable equipment breakdowns and bypassing.

Schedule B of the permit includes the requirement for the submittal of annual reports. The conditions are standard language requirements concerning the annual report on inflow and infiltration removal.

Schedule C - Compliance Conditions

The proposed permit includes two compliance conditions with compliance deadlines. The requirements include: Biosolids management and meeting the compliance dates established in this schedule or notify the Department within 14 days following any lapsed compliance date.

Schedule D - Special Conditions

The proposed permit includes six special conditions. The requirements include: Adverse impacts to groundwater, the facilities must be supervised by personnel certified by the Department in the operation of treatment and/or collection systems, biosolids management, a contingency plan for preventing and handling spills, toxics monitoring, and notifying the Department of malfunctions.

APPENDIX B

Itemized Capital Improvement Cost Estimates

NEAR TERM IMPROVEMENTS
Common to Both Alternatives

Item		Est Quant	Unit	Unit Price	Total Price	Totals
1	Contractor mobilization and bond	1	EA	$45,000	$45,000	$45,000
2	Headworks					$191,660
	Sitework	1	EA	$6,600	$6,600	
	Structural - Influent Screen Channel	32	CY	$660	$21,120	
	Structural - Grit Basin & Effluent Structure	44	CY	$660	$29,040	
	Structural - Walkway & Grating	1	EA	$4,400	$4,400	
	Mechanical - Influent Screen	1	EA	$7,700	$7,700	
	Mechanical - Grit Basin Mechanism, Pump & Cla	1	EA	$92,000	$92,000	
	Mechanical - Piping	1	EA	$22,000	$22,000	
	Ultrasonic level controls	1	EA	$8,800	$8,800	
3	Lagoon Improvements - Sitework					$60,400
	Riprap banks	2,000	LF	$17	$34,000	
	Depth Transmitters	4	EA	$6,600	$26,400	
4	Final Lagoon outlet flow structure - Sitework	1	EA	$10,000	$10,000	$55,000
	Structural	10	CY	$1,500	$15,000	
	Mechanical - Decanter Improvements	1	EA	$25,000	$25,000	
	Electrical and controls	1	EA	$5,000	$5,000	
5	Disinfection system improvements - Cl2 Mix chamt	1	EA	$8,000	$8,000	$37,700
	Chlorinator - flow paced auto/manual	1	EA	$6,600	$6,600	
	Flowmeter transmitter to chlorinator	1	EA	$5,500	$5,500	
	Tablet chlorination system	1	EA	$13,200	$13,200	
	Electrical and controls	1	EA	$4,400	$4,400	
6	Effluent Irrigation Improvements					$37,600
	Mechanical - Irrigation Pumps Draft Tubes	2	EA	$8,800	$17,600	
	Mechanical - Irrigation Pump Set	1	EA	$20,000	$20,000	
7	River Outfall					$18,800
	Assessment	1	EA	$8,800	$8,800	
	Independence-Monmouth Outfall Plan	1	EA	$10,000	$10,000	
8	Effluent Irrigation Assessment and Plan					$15,400
	Assessment	1	EA	$8,800	$8,800	
	Independence Effluent Irrigation Plan	1	EA	$6,600	$6,600	
9	Lagoon Solids Management Plan					$9,900
	Assessment	1	EA	$1,100	$1,100	
	Solids Plan	1	EA	$8,800	$8,800	
10	WWTF Control System					$34,600
	WWTF Sensors/Transmitters	4	EA	$4,400	$17,600	
	WWTF Computer, Phone Connection	1	EA	$6,600	$6,600	
	SCADA Programming	40	HRS	$95	$3,800	
	Plant Computer at Public Works	1	EA	$6,600	$6,600	
	Total Construction Cost				**$506,060**	
	Project Soft Costs and Contingency @ 44%				**$222,666**	
	TOTAL COST				**$728,726**	

Alternative 1 Enhanced Lagoon Operation and Effluent Irrigation

Item		No.	Unit	Unit Cost	Cost	Totals
Long Term Treatment Alternative 1						
Enhance Lagoons & Effluent Irrigation						
101	Contractor mobilization and bond	1	EA	$0	$210,000	$210,000
102	Lagoon Upgrade - Cells 1, 2 and 3	2	EA	$12,000	$24,000	$1,194,000
	Sitework - Excavation	155,000	CY	$1	$186,000	
	Dike Fill	13,500	CY	$12	$162,000	
	Subgrade	35,000	CY	$12	$420,000	
	PVC liner	160,000	SF	$2	$320,000	
	Electrical and controls	1	EA	$22,000	$22,000	
	Inlet/Outlet structures - Sitework	12	EA	$5,000	$60,000	
103	Lagoon transfer pump - Sitework	1	EA	$2,000	$2,000	$55,000
	Structural - Pump Inlets	2	EA	$10,000	$20,000	
	Mechanical - Pumps	2	EA	$7,000	$14,000	
	Mechanical - Piping	1	EA	$12,000	$12,000	
	Electrical and controls	1	EA	$7,000	$7,000	
104	Final Lagoon Effluent Structure					$22,240
	Structural	32	CY	$320	$10,240	
	Mechanical - Automated Decanter	1	EA	$8,000	$8,000	
	Electrical and controls	1	EA	$4,000	$4,000	
105	Effluent Treatment & Algae Removal					$456,400
	Structural - Effluent Building	1,600	SF	$65	$104,000	
	Structural - Sand Filter	88	CY	$800	$70,400	
	Mechanical - Sand Filter	1	EA	$250,000	$250,000	
	Mechanical - Piping	1	EA	$20,000	$20,000	
	Electrical and controls	3	EA	$4,000	$12,000	
106	Disinfection system upgrade - Sitework	1	EA	$3,000	$3,000	$258,000
	Structural - Disinfection Building	2,000	CY	$65	$130,000	
	Equipment - Onsite Chlorine Generation System	1	EA	$78,000	$78,000	
	Mechanical - Chlorination System	1	EA	$35,000	$35,000	
	Electrical and controls - Disinfection	1	EA	$12,000	$12,000	
107	Dechlorination Annex					74,100
	Dechlorination basin and diffuser - Sitework	1	EA	$3,500	3,500	
	Structural	32	CY	$600	19,200	
	Diffuser, weirs and piping	1	EA	$4,000	4,000	
	Solution pumps and ejectors	2	EA	$2,500	5,000	
	Mechanical - Piping	1	EA	$12,000	12,000	
	Dechlorinator Room	200	SF	$50	10,000	
	Sulfonator - flow paced auto/manual	1	EA	$4,000	4,000	
	Sulfonator - manual standby	1	EA	$2,000	2,000	
	Sulfur dioxide gas cylinders	4	EA	$600	2,400	
	Sulfur dioxide cylinder scale.	1	EA	$2,500	2,500	
	Cl2/SO2 low/high pressure and ambient alarms	3	EA	$1,500	4,500	
	Electrical and controls	1	EA	$4,000	4,000	
	Miscellaneous safety, sampling and lab eqpt	1	EA	$1,000	1,000	
108	WWTF Control System	1	EA	$40,000	$40,000	$75,000
	Supervisory Control at Public Works	1	EA	$35,000	$35,000	
	Total Construction Cost				**$2,344,740**	
	Project Soft Costs and Contingency @ 44%				**$1,031,686**	
	TOTAL COST				**$3,376,426**	

Alternative 2 Secondary Treatment Plant

Item		No.	Unit	Unit Cost	Cost	Totals
Long Term Treatment Alternative 2						
Secondary Treatment Plant						
201	Contractor mobilization and bond	1	EA	$25,000	$25,000	$290,000
202	Headworks					
	Influent Sewer from Headworks to WWTF	800	LF	$32	$25,600	$49,600
	Mechanical - Influent Screen Upgrade	1	EA	$12,000	$12,000	
	Mechanical - Grit Removal Unit Upgrade	1	EA	$12,000	$12,000	
205	WWTF Influent Structure - Sitework	1	EA	4,000	$6,000	$30,600
	Structural - Influent Structure	1	EA	15,000	$15,000	
	Mechanical - Influent Structure	4	EA	2,400	$9,600	
206	Sequencing Batch Reactor					$996,000
	Sitework - SBR Secondary Plant	10000	SF	1.5	$15,000	
	Structural - (2) 80-ft-diameter SBR Tanks	2	basins	180,000	$360,000	
	Structural - Control Building	1,200	SF	80	$96,000	
	Mechanical - Aerators, Decanters, Manifolds, Blowers, Motive Pumps, WAS Pumps, Valves	1	EA	420,000	$420,000	
	Mechanical - Piping	1	EA	30,000	$30,000	
	Electrical	1	EA	35,000	$35,000	
	Controls	1	EA	25,000	$25,000	
	Programming	1	EA	15,000	$15,000	
207	Plant Drain Pumps- Sitework	1	EA	2,000	$2,000	$69,000
	Structural - Plant Drain Wetwell	1	EA	30,000	$30,000	
	Mechanical - Piping	1	EA	18000	$18,000	
	Mechanical - Pumps	1	EA	12,000	$12,000	
	Electrical and controls	1	EA	7,000	$7,000	
208	Effluent Filter					$500,600
	Structural - Effluent Flow Control Structure	22	CY	600	$13,200	
	Structural - Effluent Building	1,200	SF	65	$78,000	
	Structural - Sand Filter	88	CY	$800	$70,400	
	Mechanical - Sand Filter	1	EA	250,000	$250,000	
	Mechanical - In-Vessel Sand Filter	2	EA	22,000	$44,000	
	Mechanical - Piping	1	EA	20,000	$20,000	
	Electrical and controls	1	EA	25,000	$25,000	
210	Disinfection system upgrade - Sitework	1	EA	3,000	$3,000	$379,800
	Structural - Disinfection Building	2,000	CY	$65	$130,000	
	Structural - UV Channels	86	CY	$800	$68,800	
	Equipment - UV Disinfection System	2	EA	$55,000	$110,000	
	Electrical - UV	2	EA	24,000	$48,000	
	Controls - UV	1	EA	20,000	$20,000	
211	Solids Handling Facility, Digestor, Storage Tanks	1	LS	800,000	$800,000	$800,000
212	WWTF Control System	1	EA	40,000	$40,000	$75,000
	Supervisory Control and Data Acquisition (SCAD	1	EA	35,000	$35,000	
	Total Construction Cost				**$2,925,600**	
	Project Soft Costs and Contingency @ 44%				**$1,287,264**	
	TOTAL COST				**$4,212,864**	

BUDGET ESTIMATE FOR PROJECT C-1
NORTH INTERCEPTOR - REPLACEMENT

Item	Description	Est. Quant.	Unit	Unit Price	Total Price
1.	**MOBILIZATION AND BONDING**	ALL	LS	LUMP SUM	$50,000
2	**SANITARY SEWER MAINLINE**				
	a. Class B Sanitary Sewer Mainline				
	1) 8-Inch Pipe, Trench Excavation, Backfill				
	0-8' Deep	550	LF	$60.00	$33,000.00
	8-12' Deep	3100	LF	$78.00	$241,800.00
	2) 10-Inch Pipe, Trench Excavation, Backfill				
	12-18' Deep	50	LF	$115.00	$5,750.00
3	**MANHOLES**				
	a. New Manholes				
	0-8' Deep	5	EA	$3,500.00	$17,500.00
	8-12' Deep	7	EA	$4,100.00	$28,700.00
4	**SURFACE RESTORATION AND DEMOLITION**				
	a. Asphalt Pavement, 8-inches	1600	SY	$45.00	$72,000.00
	b. Curb	1600	SY	$20.00	$32,000.00
	c. Demolition and Abandon Existing Facilities	ALL	LS	LUMP SUM	$0
5	**MISCELANEOUS IMPROVEMENTS**				
	a. Traffic Control	ALL	LS	LUMP SUM	$25,000

Total Construction Cost	**$505,750**
Engineering @ 17%	**$85,978**
Legal, Administrative, Property Acquisition @ 7%	**$35,403**
Contingency @ 20%	**$101,150**
TOTAL COST	**$728,280**

BUDGET ESTIMATE FOR PROJECT C-2
STRYKER ROAD INTERCEPTOR - REPLACEMENT

Item	Description	Est. Quant.	Unit	Unit Price	Total Price
1.	**MOBILIZATION AND BONDING**	ALL	LS	LUMP SUM	$55,000
2	**SANITARY SEWER MAINLINE**				
	a. Class A Sanitary Sewer Mainline				
	1) 8-Inch Pipe, Trench Excavation, Backfill				
	12-18' Deep	225	LF	$40.00	$9,000.00
	18-25' Deep	1825	LF	$50.00	$91,250.00
	2) 12-Inch Pipe, Trench Excavation, Backfill				
	18-25' Deep	1100	LF	$60.00	$66,000.00
	b. Class B Sanitary Sewer Mainline				
	1) 8-Inch Pipe, Trench Excavation, Backfill				
	12-18' Deep	800	LF	$110.00	$88,000.00
	18-25' Deep	500	LF	$120.00	$60,000.00
	2) 10-Inch Pipe, Trench Excavation, Backfill				
	18-25' Deep	390	LF	$125.00	$48,750.00
	3) 12-Inch Pipe, Trench Excavation, Backfill				
	18-25' Deep	50	LF	$125.00	$6,250.00
	4) 18-Inch Pipe, Trench Excavation, Backfill				
3	**MANHOLES**				
	a. New Manholes				
	12-18' Deep	4	EA	$4,650.00	$18,600.00
	18-25' Deep	10	EA	$5,300.00	$53,000.00
4	**SURFACE RESTORATION AND DEMOLITION**				
	a. Asphalt Pavement, 4-inches	800	SY	$45.00	$36,000.00
	b. Pavement Demolition	800	SY	$10.00	$8,000.00
	c. Demolition and Abandon Existing Facilities	ALL	LS	LUMP SUM	$20,000
5	**MISCELANEOUS IMPROVEMENTS**				
	a. Traffic Control	ALL	LS	LUMP SUM	$15,000

Total Construction Cost	**$574,850**
Engineering @ 17%	**$97,725**
Legal, Administrative, Property Acquisition @ 7%	**$40,240**
Contingency @ 20%	**$114,970**
TOTAL COST	**$827,784**

BUDGET ESTIMATE FOR PROJECT C-3
WEST INTERCEPTOR - REPLACEMENT GUNCLUB TO LAGOON P.S.

Item	Description	Est. Quant.	Unit	Unit Price	Total Price
1.	**MOBILIZATION AND BONDING**	ALL	LS	LUMP SUM	$65,000
2	**SANITARY SEWER MAINLINE**				
	a. Class A Sanitary Sewer Mainline				
	1) 15-Inch Pipe, Trench Excavation, Backfill 12-18' Deep	2400	LF	$70.00	$168,000.00
	b. Class B Sanitary Sewer Mainline				
	1) 10-Inch Pipe, Trench Excavation, Backfill 12-18' Deep	1400	LF	$112.00	$156,800.00
	2) 12-Inch Pipe, Trench Excavation, Backfill 12-18' Deep	1000	LF	$115.00	$115,000.00
3	**MANHOLES**				
	a. New Manholes				
	0-8' Deep	1	EA	$3,500.00	$3,500.00
	8-12' Deep	5	EA	$4,100.00	$20,500.00
	12-18' Deep	20	EA	$4,650.00	$93,000.00
4	**SURFACE RESTORATION AND DEMOLITION**				
	a. Asphalt Pavement, 4-inches	800	SY	$40.00	$32,000.00
	b. Seed	5400	SY	$0.80	$4,320.00
	c. Pavement Demolition	800	SY	$10.00	$8,000.00
	d. Demolition and Abandon Existing Facilities	ALL	LS	LUMP SUM	$35,000
5	**MISCELANEOUS IMPROVEMENTS**				
	a. Traffic Control	ALL	LS	LUMP SUM	$10,000
	b. Gun Club Road Bore	ALL	LS	LUMP SUM	$15,000

Total Construction Cost	**$726,120**
Engineering @ 17%	**$123,440**
Legal, Administrative, Property Acquisition @ 7%	**$50,828**
Contingency @ 20%	**$145,224**
TOTAL COST	**$1,045,613**

BUDGET ESTIMATE FOR PROJECT C-4
WEST INTERCEPTOR - REPLACEMENT WEST END TO GUNCLUB ROAD

Item	Description	Est. Quant.	Unit	Unit Price	Total Price
1.	**MOBILIZATION AND BONDING**	ALL	LS	LUMP SUM	$27,500
2	**SANITARY SEWER MAINLINE**				
	a. Class A Sanitary Sewer Mainline				
	1) 12-Inch Pipe, Trench Excavation, Backfill				
	0-8' Deep	1000	LF	$45.00	$45,000.00
	8-12' Deep	1600	LF	$50.00	$80,000.00
	2) 18-Inch Pipe, Trench Excavation, Backfill				
3	**MANHOLES**				
	a. New Manholes				
	0-8' Deep	3	EA	$3,500.00	$10,500.00
	8-12' Deep	5	EA	$4,100.00	$20,500.00
	12-18' Deep	2	EA	$4,650.00	$9,300.00
4	**SURFACE RESTORATION AND DEMOLITION**				
	a. Asphalt Pavement, 4-inches	170	SY	$45.00	$7,650.00
	b. Asphalt Pavement, Demolition	170	SY	$10	$1,700.00
	c. Seed	5500	SY	$1.00	$5,500.00
	d. Demolition and Abandon Existing Facilities	ALL	LS	LUMP SUM	$40,000
5	**MISCELANEOUS IMPROVEMENTS**				
	a. Traffic Control	ALL	LS	LUMP SUM	$5,000

Total Construction Cost	**$252,650**
Engineering @ 17%	**$42,951**
Legal, Administrative, Property Acquisition @ 7%	**$17,686**
Contingency @ 20%	**$50,530**
TOTAL COST	**$363,816**

BUDGET ESTIMATE FOR PROJECT C-5
SOUTHWEST INTERCEPTOR - FUTURE

Item	Description	Est. Quant.	Unit	Unit Price	Total Price
1.	**MOBILIZATION AND BONDING**	ALL	LS	LUMP SUM	$45,000
2	**SANITARY SEWER MAINLINE**				
	a. Class A Sanitary Sewer Mainline				
	1) 12-Inch Pipe, Trench Excavation, Backfill				
	0-8' Deep	800	LF	$65.00	$52,000.00
	8-12' Deep	2000	LF	$82.00	$164,000.00
	12-18' Deep	325	LF	$115.00	$37,375.00
	18-25' Deep	50	LF	$125.00	$6,250.00
3	**MANHOLES**				
	a. New Manholes				
	0-8' Deep	3	EA	$3,500.00	$10,500.00
	8-12' Deep	5	EA	$4,100.00	$20,500.00
	12-18' Deep	1	EA	$4,650.00	$4,650.00
4	**SURFACE RESTORATION AND DEMOLITION**				
	a. Asphalt Pavement, 4-inches	1750	SY	$40.00	$70,000.00
	b. Pavement Demolition	1750	SY	$10.00	$17,500.00
	c. Demolition and Abandon Existing Facilities	ALL	LS	LUMP SUM	$10,000
5	**MISCELANEOUS IMPROVEMENTS**				
	a. Traffic Control	ALL	LS	LUMP SUM	$10,000

Total Construction Cost	**$447,775**
Engineering @ 17%	**$76,122**
Legal, Administrative, Property Acquisition @ 7%	**$31,344**
Contingency @ 20%	**$89,555**
TOTAL COST	**$644,796**

BUDGET ESTIMATE FOR PROJECT C-6
SOUTHEAST INTERCEPTOR - FUTURE

Item	Description	Est. Quant.	Unit	Unit Price	Total Price
1.	**MOBILIZATION AND BONDING**	ALL	LS	LUMP SUM	$72,000
2	**SANITARY SEWER MAINLINE**				
	a. Class A Sanitary Sewer Mainline				
	1) 8-Inch Pipe, Trench Excavation, Backfill 12-18' Deep	1850	LF	$45.00	$83,250.00
	2) 12-Inch Pipe, Trench Excavation, Backfill				
	b. Class B Sanitary Sewer Mainline				
	1) 8-Inch Pipe, Trench Excavation, Backfill 12-18' Deep	2895	LF	$110.00	$318,450.00
	2) 12-Inch Pipe, Trench Excavation, Backfill 12-18' Deep	725	LF	$115.00	$83,375.00
3	**MANHOLES**				
	a. New Manholes				
	0-8' Deep	6	EA	$3,500.00	$21,000.00
	8-12' Deep	8	EA	$4,100.00	$32,800.00
	12-18' Deep	2	EA	$4,650.00	$9,300.00
4	**SURFACE RESTORATION AND DEMOLITION**				
	a. Asphalt Pavement, 4-inches	2000	SY	$40.00	$80,000.00
	b. Curb	550	SY	$10.00	$5,500.00
	c. Pavement Demolition	2000	SY	$10.00	$20,000.00
	d. Demolition and Abandon Existing Facilities	ALL	LS	LUMP SUM	$5,000
5	**MISCELANEOUS IMPROVEMENTS**				
	a. Traffic Control	ALL	LS	LUMP SUM	$4,000

Total Construction Cost	**$734,675**
Engineering @ 17%	**$124,895**
Legal, Administrative, Property Acquisition @ 7%	**$51,427**
Contingency @ 20%	**$146,935**
TOTAL COST	**$1,057,932**

BUDGET ESTIMATE FOR PROJECT PS-1
GUNCLUB ROAD PUMP STATION - FUTURE

Item	Description	Est. Quant.	Unit	Unit Price	Total Price
1.	**MOBILIZATION AND BONDING**	ALL	LS	LUMP SUM	$50,000
2	**PUMP STATION**				
	a. Pump Station Wet Well, Valve Vault, Pipes, Appurten:	ALL	LS	LUMP SUM	$60,200
	b. Sewage Pumps, Rails, Miscellaneous Hardware	ALL	LS	LUMP SUM	$35,000
	c. Pump Station Control Building	ALL	LS	LUMP SUM	$70,000
	d. Pump Station Electrical Service, Controls, Misc. Elect:	ALL	LS	LUMP SUM	$65,000
	e. Site Grading, Utilities	ALL	LS	LUMP SUM	$30,000
	f. Pump Station Auxiliary Power Generator	ALL	LS	LUMP SUM	$65,000
3	**FORCE MAIN**				
	a. 12-Inch Force Main, C-905 PVC, Class A Backfill	100	LF	$40.00	$4,000.00
	b. 12-Inch Force Main, C-905 PVC, Class B Backfill	1000	LF	$70.00	$70,000.00
	c. Combination Air/Vac Valve and Vault	2	EA	$3,500.00	$7,000.00
4	**MISCELANEOUS IMPROVEMENTS**				
	a. Traffic Control	ALL	LS	LUMP SUM	$15,000
	b. Miscellaneous	ALL	LS	LUMP SUM	$20,000

Total Construction Cost	**$491,200**
Engineering @ 17%	**$83,504**
Legal, Administrative, Property Acquisition @ 7%	**$34,384**
Contingency @ 20%	**$98,240**
TOTAL COST	**$707,328**

BUDGET ESTIMATE FOR PROJECT PS-2
9TH STREET PUMP STATION - UPGRADE

Item	Description	Est. Quant.	Unit	Unit Price	Total Price
1.	**MOBILIZATION AND BONDING**	ALL	LS	LUMP SUM	$27,500
2	**PUMP STATION**				
	a. Pump Station Wet Well, Valve Vault, Pipes, Appurten	ALL	LS	LUMP SUM	$40,000
	b. Sewage Pumps, Rails, Miscellaneous Hardware	ALL	LS	LUMP SUM	$60,000
	c. Pump Station Electrical Service, Controls, Misc. Elect	ALL	LS	LUMP SUM	$55,000
	d. Site Grading, Utilities	ALL	LS	LUMP SUM	$10,000
	e. Auxiliary Power Generator	ALL	LS	LUMP SUM	$65,000

Total Construction Cost	**$257,500**
Engineering @ 17%	**$43,775**
Legal, Administrative, Property Acquisition @ 7%	**$18,025**
Contingency @ 20%	**$51,500**
TOTAL COST	**$370,800**

BUDGET ESTIMATE FOR PROJECT PS-3
BRIER PUMP STATION - REPLACEMENT

Item	Description	Est. Quant.	Unit	Unit Price	Total Price
1.	**MOBILIZATION AND BONDING**	ALL	LS	LUMP SUM	$29,000
2	**PUMP STATION**				
	a. Pump Station Wet Well, Valve Vault, Pipes, Appurten	ALL	LS	LUMP SUM	$60,200
	b. Sewage Pumps, Rails, Miscellaneous Hardware	ALL	LS	LUMP SUM	$30,000
	c. Pump Station Electrical Service, Controls, Misc. Electr	ALL	LS	LUMP SUM	$45,000
	d. Site Grading, Utilities	ALL	LS	LUMP SUM	$20,000
3	**FORCE MAIN**				
	a. 4-Inch Force Main, C-900 PVC, Class A Backfill	500	LF	$30.00	$15,000.00
	b. 4-Inch Force Main, C-900 PVC, Class B Backfill	1200	LF	$40.00	$48,000.00
	c. Combination Air/Vac Valve and Vault	2	EA	$3,500.00	$7,000.00
4	**MISCELANEOUS IMPROVEMENTS**				
	a. Traffic Control	ALL	LS	LUMP SUM	$15,000
	b. Miscellaneous	ALL	LS	LUMP SUM	$10,000

Total Construction Cost	**$279,200**
Engineering @ 17%	**$47,464**
Legal, Administrative, Property Acquisition @ 7%	**$19,544**
Contingency @ 20%	**$55,840**
TOTAL COST	**$402,048**

BUDGET ESTIMATE FOR PROJECT PS-4
WILLIAMS STREET- REPLACEMENT

Item	Description	Est. Quant.	Unit	Unit Price	Total Price
1.	**MOBILIZATION AND BONDING**	ALL	LS	LUMP SUM	$37,500
2	**PUMP STATION**				
	a. Pump Station Wet Well, Valve Vault, Pipes, Appurten	ALL	LS	LUMP SUM	$60,200
	b. Sewage Pumps, Rails, Miscellaneous Hardware	ALL	LS	LUMP SUM	$35,000
	c. Pump Station Electrical Service, Controls, Misc. Electr	ALL	LS	LUMP SUM	$60,000
	d. Site Grading, Utilities	ALL	LS	LUMP SUM	$10,500
	e. Pump Station Auxiliary Power Generator	ALL	LS	LUMP SUM	$56,000
3	**FORCE MAIN**				
	a. 8-Inch Force Main, C-900 PVC, Class A Backfill	500	LF	$40.00	$20,000.00
	b. 8-Inch Force Main, C-900 PVC, Class B Backfill	1200	LF	$60.00	$72,000.00
	c. Combination Air/Vac Valve and Vault	2	EA	$4,500.00	$9,000.00
4	**MISCELANEOUS IMPROVEMENTS**				
	a. Traffic Control	ALL	LS	LUMP SUM	$2,500
	b. Miscellaneous	ALL	LS	LUMP SUM	$15,000

Total Construction Cost	**$377,700**
Engineering @ 17%	**$64,209**
Legal, Administrative, Property Acquisition @ 7%	**$26,439**
Contingency @ 20%	**$75,540**
TOTAL COST	**$543,888**

BUDGET ESTIMATE FOR PROJECT PS-5
NORTH PUMP STATION - REPLACEMENT

Item	Description	Est. Quant.	Unit	Unit Price	Total Price
1.	**MOBILIZATION AND BONDING**	ALL	LS	LUMP SUM	$28,500
2	**PUMP STATION**				
	a. Pump Station Wet Well, Valve Vault, Pipes, Appurten	ALL	LS	LUMP SUM	$55,000
	b. Sewage Pumps, Rails, Miscellaneous Hardware	ALL	LS	LUMP SUM	$30,000
	c. Pump Station Electrical Service, Controls, Misc. Elect	ALL	LS	LUMP SUM	$45,000
	d. Site Grading, Utilities	ALL	LS	LUMP SUM	$10,500
3	**FORCE MAIN**				
	b. 4-Inch Force Main, C-900 PVC, Class B Backfill	1550	LF	$40.00	$62,000.00
	c. Combination Air/Vac Valve and Vault	2	EA	$16,000.00	$32,000.00
4	**MISCELANEOUS IMPROVEMENTS**				
	a. Traffic Control	ALL	LS	LUMP SUM	$15,000
	b. Surface Restoration, 4" Asphalt	325	SY	$40.00	$13,000.00
	c. Miscellaneous	ALL	LS	LUMP SUM	$15,000

Total Construction Cost	**$306,000**
Engineering @ 17%	**$52,020**
Legal, Administrative, Property Acquisition @ 7%	**$21,420**
Contingency @ 20%	**$61,200**
TOTAL COST	**$440,640**

BUDGET ESTIMATE FOR PROJECT PS-6
13TH STREET PUMP STATION - REPLACEMENT

Item	Description	Est. Quant.	Unit	Unit Price	Total Price
1.	**MOBILIZATION AND BONDING**	ALL	LS	LUMP SUM	$33,000
2	**PUMP STATION**				
	a. Pump Station Wet Well, Valve Vault, Pipes, Appurten	ALL	LS	LUMP SUM	$60,200
	b. Sewage Pumps, Rails, Miscellaneous Hardware	ALL	LS	LUMP SUM	$35,000
	c. Pump Station Electrical Service, Controls, Misc. Electr	ALL	LS	LUMP SUM	$75,000
	d. Site Grading, Utilities	ALL	LS	LUMP SUM	$12,500
3	**FORCE MAIN**				
	a. 4-Inch Force Main, C-900 PVC, Class A Backfill	500	LF	$30.00	$15,000.00
	b. 4-Inch Force Main, C-900 PVC, Class B Backfill	1200	LF	$40.00	$48,000.00
	c. Combination Air/Vac Valve and Vault	2	EA	$16,000.00	$32,000.00
4	**MISCELANEOUS IMPROVEMENTS**				
	a. Traffic Control	ALL	LS	LUMP SUM	$7,500
	b. Miscellaneous	ALL	LS	LUMP SUM	$15,000

Total Construction Cost	**$333,200**
Engineering @ 17%	**$56,644**
Legal, Administrative, Property Acquisition @ 7%	**$23,324**
Contingency @ 20%	**$66,640**
TOTAL COST	**$479,808**

BUDGET ESTIMATE COMPARISON FOR IRRIGATION DISPOSAL OPTIONS
October 4, 2005

Item	Description	Est. Quant.	Unit	Unit Price	Total Price
ALTERNATE 1 - DEDICATED IRRIGATION FACILITY FOR CITY OF INDEPENDENCE (Riddell Site)					
1	**IRRIGATION PUMP STATION - Independent Facility**				
	a. Pumps at Independence WWTF	ALL	LS	LUMP SUM	$100,000
	b. Structure for Independence Pump Station	ALL	LS	LUMP SUM	$55,000
	c. Mechanical for Independence Pump Station	ALL	LS	LUMP SUM	$45,000
	d. Electrical for Independence Pump Station	ALL	LS	LUMP SUM	$55,000
	e. Force Main	16200	LF	$60.00	$972,000
	f. Landowner Irrigation Contract	ALL	LS	LUMP SUM	$200,000
	g. Irrigation Set	ALL	LS	LUMP SUM	$630,000
	h. Easements	ALL	LS	LUMP SUM	$50,000
	ALTERNATE 1 - TOTAL				**$2,107,000**
	Project Soft Costs and Contingency @ 44%				**$927,080**
	TOTAL COST				**$3,034,080**
ALTERNATE 2 - DEDICATED IRRIGATION FACILITY FOR CITY OF INDEPENDENCE (1-Mile of WWTF)					
2	**IRRIGATION PUMP STATION - Independent Facility**				
	a. Pumps at Independence WWTF	ALL	LS	LUMP SUM	$100,000
	b. Structures	ALL	LS	LUMP SUM	$55,000
	c. Mechanical	ALL	LS	LUMP SUM	$45,000
	d. Electrical	ALL	LS	LUMP SUM	$55,000
	e. Force Main	5200	LF	$60.00	$312,000
	f. Landowner Irrigation Contract	ALL	LS	LUMP SUM	$200,000
	g. Irrigation Set	ALL	LS	LUMP SUM	$500,000
	h. Easements	ALL	LS	LUMP SUM	$100,000
	ALTERNATE 2 - TOTAL				**$1,367,000**
	Project Soft Costs and Contingency @ 44%				**$601,480**
	TOTAL COST				**$1,968,480**
ALTERNATE 3 - COMBINED IRRIGATION SYSTEM (Expansion of Existing Monmouth Facilities)					
3	**IRRIGATION PUMP STATION - Joint Monmouth Facility**				
	a. Pumps at Independence WWTF	ALL	LS	LUMP SUM	$100,000
	b. Structures	ALL	LS	LUMP SUM	$55,000
	c. Mechanical	ALL	LS	LUMP SUM	$45,000
	d. Electrical	ALL	LS	LUMP SUM	$55,000
	e. Force Main to Monmouth WWTF	7800	LF	$60.00	$468,000
	f. Capacity Improvements to Monmouth CL2 Pump Stati	ALL	LS	LUMP SUM	$160,000
	g. Capacity Improvements to Monmouth Irrigation Syste	ALL	LS	LUMP SUM	$400,000
	h. Landowner Irrigation Contract	ALL	LS	LUMP SUM	$200,000
	i. Monmouth Initial Capital Cost Reinbursement	ALL	LS	LUMP SUM	$0
	j. Easements	ALL	LS	LUMP SUM	$20,000
	ALTERNATE 3 - TOTAL				**$1,503,000**
	Project Soft Costs and Contingency @ 44%				**$661,320**
	TOTAL COST				**$2,164,320**

APPENDIX C

System Wide Flow Analysis
DEQ Flow Projections
Historical Flow Projections

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

Avg. Pop 2003 to 2004 = **6975**

Overall Flow and Loads

Parameter	DEQ Graphical Calculation Value (mgd)	DEQ Graphical Calculation Value (gpcpd)	DEQ 5-Yr Accum Values (mgd)	DEQ 5-Yr Accum Values (gpcpd)	Historical Data (mgd)	Historical Data (gpcpd)	From Facilities Plan 1995 Unit Values (mgd)	From Facilities Plan 1995 Unit Values (gpcpd)
Avg. Daily Infiltration	-	-	-	-	0.1	-	0.1	0.1
Avg. Daily Exfiltration	-	-	-	-	0.0	-	0.0	0.0
BOD Loading	-	-	-	-	809 lbs/day	0.12	900 lbs/day	0.19
TSS Loading	-	-	-	-	698 lbs/day	0.10	780 lbs/day	0.16
Inflow Correlation (mgd/inch of Precip.)	-	-	-	-	1.8 mgd/in.	-	1.8 mgd/in.	n/a
Avg. Daily Domestic Flow (ADF)	0.57	82	0.54	77	0.42	60	0.48	98
Peak Daily Average Flow (PDAF)	4.10	588	4.10	587	4.10	588	-	-
Max Monthly Dry Weather Flow (MMDWF)	0.89	128	0.68	97	0.47	67	0.75	154
Max Monthly Wet Weather Flow (MMWWF)	1.50	215	1.46	209	1.79	257	1.39	285
Peak Wet Weather Hydraulic Flow (WWPIF)	7.60	1090	7.60	1090	7.99	1146	6.94	1424

Criteria for Projecting Future WW Conditions at the WWTF

Parameter	Value
Per Capita Domestic Sewage	66 gpcpd
Infiltration Contribution from New Construction, Prorated for Population Increase	0.10 mgd
Diurnal Peaking Factor	3.0
Existing Inflow Correlation	1.8 mgd/inch of Precip.
Per Capita BOD Loading	0.12 lbs/day/capita
Per Capita TSS Loading	0.10 lbs/day/capita
Design Storm, 5-Year Recurrence	3.5 inches/day
5-Year May Cumulative Rainfall	2.51 inches/month
5-Year January Cumulative Rainfall	9.10 inches/month
Avg. Daily Domestic Flow (ADF)	66 gpcpd
Peak Daily Average Flow (PDAF)	588 gpcpd
Max Monthly Dry Weather Flow (MMDWF)	98 gpcpd
Max Monthly Wet Weather Flow (MMWWF)	257 gpcpd
Peak Wet Weather Hydraulic Flow (WWPIF)	N.A.

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028
Summary of Ratios for Historic System Flows

Year (May - April)	Total Yr. Precip. (in)	Avg. Daily Precip (0.10 in)	Total Yr Q I/I (mgd)	Yr. I/I Correl. (mgd/in)	Calc. I/I Correl. (mgd/in)	AADF (mgd)	AADF (gpcpd)	ADF (mgd)	ADF (gpcpd)	PDF (mgd)	PDF (gpcpd)	MMDWF (mgd)	MMDWF (gpcpd)	MMWWF (mgd)	MMWWF (gpcpd)	WWPIF (mgd)	WWPIF (gpcpd)	Avg D Infl. (gpd)	Avg. D Exfil. (gpd)	BOD (lbs/capita)	TSS (lbs/capita)
5/96 - 4/97	68.74	1.88	241.859	3.52	1.21	1.18	227	0.57	109	3.96	758	0.78	149	3.35	642	6.01	1150	0.1	0.0	0.143	0.124
5/97 - 4/98	58.39	1.60	154.709	2.65	1.95	0.86	157	0.47	86	3.96	726	0.71	131	2.40	440	8.29	1520	0.1	0.0	0.152	0.132
5/98 - 4/99	74.39	2.04	166.115	2.23	2.08	0.90	157	0.48	85	5.99	1053	0.86	151	1.96	345	8.82	1550	0.1	0.0	0.106	0.109
5/99 - 4/00	47.17	1.29	108.704	2.30	2.06	0.67	114	0.39	65	3.81	644	0.44	74	1.30	220	8.42	1422	0.1	0.0	0.116	0.099
5/00 - 4/01	23.53	0.64	20.887	0.89	0.78	0.46	73	0.41	67	1.37	221	0.46	74	0.61	643	4.00	643	0.0	0.0	0.116	0.099
5/01 - 4/02	52.05	1.43	148.307	2.85	4.12	0.80	123	0.41	63	4.02	619	0.45	69	1.64	253	15.80	2435	0.2	0.0	0.067	0.076
5/02 - 4/03	47.14	1.29	145.144	3.08	1.71	1.14	170	0.76	113	7.02	1046	0.81	121	2.45	364	8.33	1241	0.1	0.0	0.125	0.108
5/03 - 4/04	37.17	1.02	110.532	2.97	1.65	0.75	108	0.46	66	4.4	631	0.51	73	1.76	253	7.23	1037	0.1	0.0	0.116	0.099
																			Total Average	0.12	0.11
		Prior Improvement Avg.	187.49	2.80	1.75	0.98	180	0.51	93	4.64	846	0.78	144	2.57	476	Calculated,		0.1			
		After Improvements Avg.	106.71	2.42	2.06	0.76	118	0.49	74.80	4.12	632	0.53	82	1.55	347	Not Measured		0.1			
		% Reduction	43%	14%		22%	35%	4%	20%	11%	25%	32%	43%	40%	27%			0%			
		Eliminate Red Data Point																			
		Prior Avg.	*187.49*	*2.80*	*1.75*	*0.98*	*180*	*0.51*	*93*	*4.64*	*846*	*0.78*	*144*	*2.57*	*476*						
		After Avg.	*128.17*	*2.80*	*1.81*	*0.84*	*129*	*0.42*	*65*	*4.08*	*631*	*0.47*	*73*	*1.79*	*273*	*7.99*					
		% Reduction	*32%*	*0%*		*14%*	*29%*	*17%*	*31%*	*12%*	*25%*	*41%*	*50%*	*30%*	*43%*						

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028
Summary of WWTF Influent, Effluent and Performance
May 2003 through April 2004

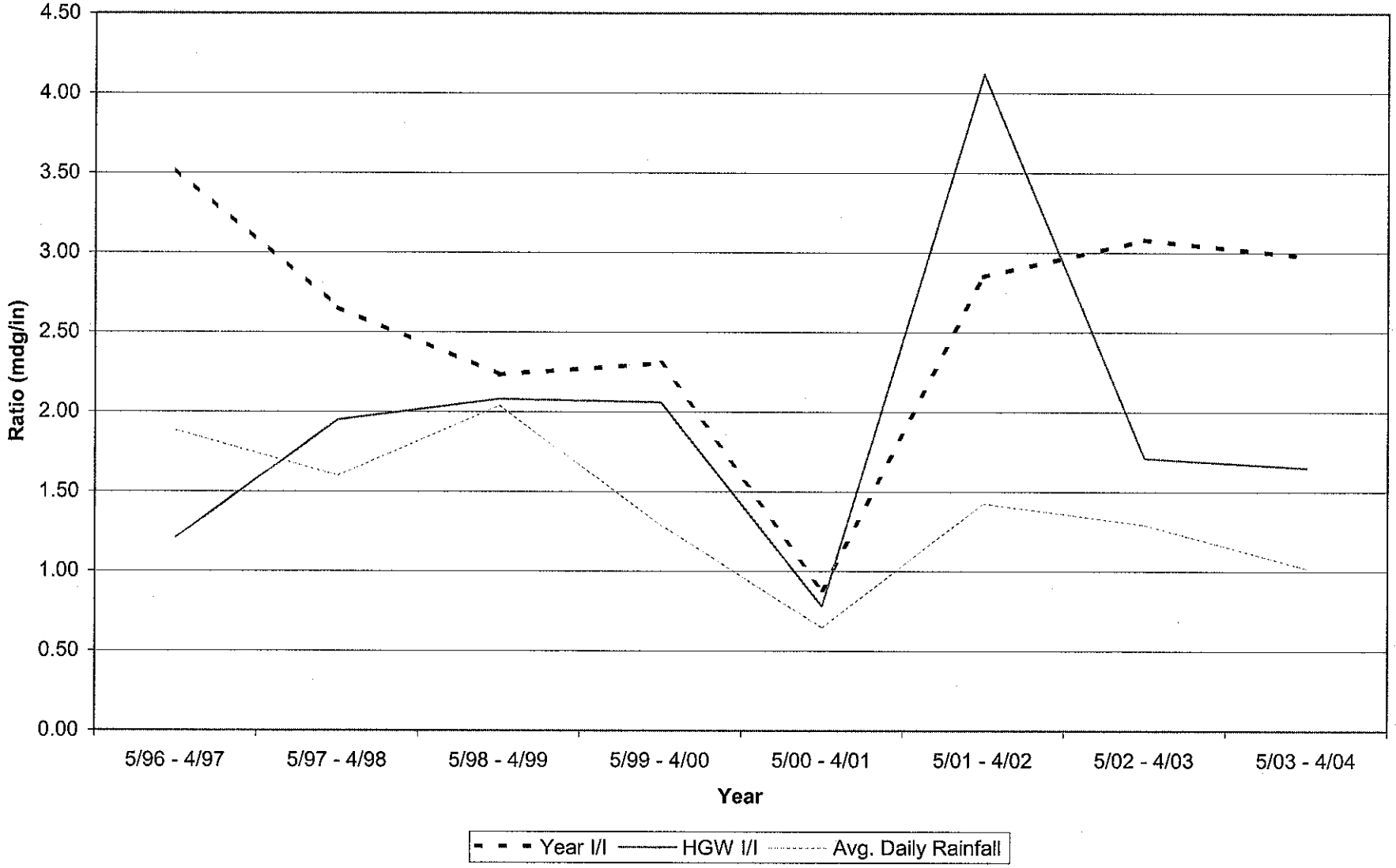
2004 Population (Est)	**7100**
2003 Population (Est)	**6850**
Average (Est) =	***6975***

OVERALL YEAR FLOW AND LOADS

Parameter	Units	Year Value	Per Capita (gpcpd)
Average Daily Infiltration	mgd	0.1	
Average Daily Exfiltration	mgd	0.0	
BOD5 Loading	lbs/day	811	
Avg. Daily Domesitc Flow (ADF)	mgd	0.46	66
Max Monthly Dry Weather Flow (MMDWF)	mgd	0.51	73
Max Monthly Wet Weather Flow (MMWWF)	mgd	1.76	253
Peak Wet Weather Hydraulic Flow (WWPIF)	mgd	7.23	1037

		Data May '03 - Ap' 04 Flows (mgd)	(gpcpd)	Comments
Avg. Dry Weather Daily Q (May - Oct)	**ADWF**	0.46	66	Average Dry Weather Flow
Peak Dry Weather Q (May - Oct)	**PDWF**	0.71	102	Peak Dry Weather Flow
Avg. Daily Wet Weather Q (Jan - April)	**AWWF**	1.02	147	Average Daily Q during the Winter Months
Peak Wet Weather Q (Jan - April)	**PWWF**	3.15	452	Peak Wet Weather Flow
Average Daily Q (May-Ap)	**AADF**	0.75	108	Average Annual Daily Flow
Peak Daily Annual Q (May - Ap)	**PDAF**	4.40	631	Maximum Day Q during the Year - **NOT** 5-yr PDAF
Peak Daily I/I Flow (May - Ap)		3.94		Peak Daily Flow after ADWF is Subtracted
Max. Mo. Dry Weather Q (May-Oct)	**MMDWF**	0.51	73	MMDWF invariably occurs in May
Max. Mo. Wet Weather Q (Nov - Ap)	**MMWWF**	1.76	253	MMWWF invariably occurs in January
Peak Instantaneous Flow	**PIF**	7.23	1037	*5023 gpm* (ADWF *3.0) + Ap/May I/I Correlation *5-Yr 24 Hr Storm + Avg Daily Infiltration
Avg. BOD5 Loading Per Day (lbs/day)		811		
Avg. TSS Loading Per Day (lbs/day)		696		
Diurnal Peaking Factor		3.0	n/a	
5-YR 24 HR DESIGN STORM (in)		3.5	n/a	NOAA Atlas 2, Volume X, Figure 26
Avg. Daily Infiltration (mdg)		0.1	n/a	ADF during High Groundwater (Ap/May) minus ADF no Rain (June-Aug)
Exist. Yearly I/I CORR. (mgd/in rainfall)		2.89	n/a	Sum of Yearly Daily Influent - Daily ADWF / Total Year Rainfall
Exist. May and April I/I CORR. (mgd/in rainfall)		1.65	n/a	Avg. (Sum of April and May Daily Influent - Daily ADWF / April and May Rainfall)

I/I Component Per Total Rainfall



CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

Summary of Daily WWTF Influent and Precipitation
May 2003 through April 2004

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF 1/1 Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Loading (mg/l)	BODx Mo. Loading (lbs/capita)	TSS Loading (mg/l)	TSS Mo. Loading (lbs/capita)	Total Effluent Flow (mgd)	BODx Loading (mg/l)	BODx Mo. Loading (lbs/capita)	TSS Loading (mg/l)	TSS Mo. Loading (lbs/capita)
1-May-03	0.00	0.636	0.636			0.636				0.177												
2-May-03	0.00	0.581	0.581			0.581				0.122												
3-May-03	0.10	0.638	0.638			N/A				0.179	1.8											
4-May-03	0.09	0.690	0.690			N/A				0.231	2.6	2.2										
5-May-03	0.00	0.714	0.714			0.714				0.255			3.5									
6-May-03	0.00	0.594	0.594			0.594				0.135												
7-May-03	0.00	0.612	0.612			0.612				0.153				145.0	0.108	84.0	0.061					
8-May-03	0.02	0.549	0.549			N/A				0.090	4.5								3.0	0.007	4.0	0.010
9-May-03	0.00	0.516	0.516			0.516				0.057												
10-May-03	0.00	0.520	0.520			0.520				0.061												
11-May-03	0.00	0.530	0.530			0.530				0.071												
12-May-03	0.07	0.509	0.509			N/A				0.050	0.7											
13-May-03	0.00	0.485	0.485			0.485				0.026												
14-May-03	0.00	0.482	0.482			0.482				0.023				167.0	0.096	173.0	0.100		3.0	0.005	6.0	0.010
15-May-03	0.00	0.483	0.483			0.483				0.024												
16-May-03	0.19	0.483	0.483			N/A				0.024	0.1											
17-May-03	0.00	0.493	0.493			0.493				0.034												
18-May-03	0.03	0.482	0.482			N/A				0.023	0.5											
19-May-03	0.00	0.465	0.465			0.465				0.006												
20-May-03	0.00	0.466	0.466			0.466				0.007									4.4	0.005	7.0	0.008
21-May-03	0.00	0.445	0.445			0.445				0.000				70.6	0.038	34.0	0.018					
22-May-03	0.00	0.455	0.455			0.455				0.000												
23-May-03	0.00	0.443	0.443			0.443				0.000												
24-May-03	0.00	0.467	0.467			0.467				0.008												
25-May-03	0.10	0.425	0.425			N/A				0.000	0.0											
26-May-03	0.00	0.473	0.473			0.473				0.014												
27-May-03	0.00	0.442	0.442			0.442				0.000												
28-May-03	0.00	0.440	0.440			0.440				0.000				206.0	0.108	129.0	0.068		10.2	0.005	11.0	0.005
29-May-03	0.00	0.452	0.452			0.452				0.000												
30-May-03	0.13	0.450	0.450			N/A				0.000	0.0											
31-May-03	0.00	0.439	0.439			0.439	0.73	15.86	0.51	0.000												
1-Jun-03	0.00	0.460	0.460		0.460					0.001												
2-Jun-03	0.00	0.448	0.448		0.448					0.000												
3-Jun-03	0.00	0.449	0.449		0.449					0.000												
4-Jun-03	0.00	0.454	0.454		0.454					0.000				116.0	0.063	14.7	0.008					
5-Jun-03	0.00	0.446	0.446		0.446					0.000												
6-Jun-03	0.00	0.449	0.449		0.449					0.000												
7-Jun-03	0.00	0.441	0.441		0.441					0.000												
8-Jun-03	0.00	0.452	0.452		0.452					0.000												
9-Jun-03	0.00	0.445	0.445		0.445					0.000												
10-Jun-03	0.00	0.439	0.439		0.439					0.000												
11-Jun-03	0.00	0.425	0.425		0.425					0.000				153.0	0.078	97.6	0.050					
12-Jun-03	0.00	0.437	0.437		0.437					0.000												
13-Jun-03	0.02	0.440	0.440		0.440					0.000												
14-Jun-03	0.00	0.427	0.427		0.427					0.000												
15-Jun-03	0.00	0.434	0.434		0.434					0.000												
16-Jun-03	0.00	0.436	0.436		0.436					0.000												
17-Jun-03	0.00	0.426	0.426		0.426					0.000												
18-Jun-03	0.01	0.428	0.428		0.428					0.000				259.0	0.133	190.0	0.097					
19-Jun-03	0.00	0.435	0.435		0.435					0.000												
20-Jun-03	0.02	0.419	0.419		0.419					0.000												
21-Jun-03	0.00	0.443	0.443		0.443					0.000												
22-Jun-03	0.00	0.446	0.446		0.446					0.000												
23-Jun-03	0.00	0.439	0.439		0.439					0.000												
24-Jun-03	0.00	0.429	0.429		0.429					0.000												
25-Jun-03	0.00	0.428	0.428		0.428					0.000				215.0	0.110	176.0	0.090					
26-Jun-03	0.00	0.446	0.446		0.446					0.000												
27-Jun-03	0.00	0.441	0.441		0.441					0.000												
28-Jun-03	0.00	0.440	0.440		0.440					0.000												
29-Jun-03	0.00	0.455	0.455		0.455					0.000												
30-Jun-03	0.00	0.439	0.439		0.439		0.05	13.20	0.44	0.000												
1-Jul-03	0.00	0.441	0.441		0.441					0.000												
2-Jul-03	0.00	0.437	0.437		0.437					0.000				247.0	0.129	143.0	0.075					
3-Jul-03	0.00	0.422	0.422		0.422					0.000												
4-Jul-03	0.00	0.465	0.465		0.465					0.006												
5-Jul-03	0.00	0.433	0.433		0.433					0.000												
6-Jul-03	0.00	0.460	0.460		0.460					0.001												
7-Jul-03	0.00	0.453	0.453		0.453					0.000												
8-Jul-03	0.00	0.445	0.445		0.445					0.000												
9-Jul-03	0.00	0.435	0.435		0.435					0.000				120.0	0.062	123.0	0.064					
10-Jul-03	0.00	0.445	0.445		0.445					0.000												
11-Jul-03	0.00	0.439	0.439		0.439					0.000												
12-Jul-03	0.00	0.435	0.435		0.435					0.000												
13-Jul-03	0.00	0.450	0.450		0.450					0.000												
14-Jul-03	0.00	0.449	0.449		0.449					0.000												
15-Jul-03	0.00	0.437	0.437		0.437					0.000												
16-Jul-03	0.00	0.431	0.431		0.431					0.000				132.0	0.068	40.9	0.021					
17-Jul-03	0.00	0.429	0.429		0.429					0.000												
18-Jul-03	0.00	0.436	0.436		0.436					0.000												
19-Jul-03	0.00	0.419	0.419		0.419					0.000												
20-Jul-03	0.00	0.442	0.442		0.442					0.000												
21-Jul-03	0.00	0.444	0.444		0.444					0.000												
22-Jul-03	0.00	0.433	0.433		0.433					0.000												
23-Jul-03	0.00	0.438	0.438		0.438					0.000				334.0	0.175	307.0	0.161					
24-Jul-03	0.00	0.437	0.437		0.437					0.000												
25-Jul-03	0.00	0.410	0.410		0.410					0.000												
26-Jul-03	0.00	0.445	0.445		0.445					0.000												
27-Jul-03	0.00	0.435	0.435		0.435					0.000												
28-Jul-03	0.00	0.447	0.447		0.447					0.000												
29-Jul-03	0.00	0.429	0.429		0.429					0.000												
30-Jul-03	0.00	0.423	0.423		0.423					0.000				196.0	0.099	134.0	0.068					
31-Jul-03	0.00	0.415	0.415		0.415		0.00	13.56	0.44	0.000												
1-Aug-03	0.00	0.422	0.422		0.422					0.000												

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0025

Summary of Daily WW TF Influent and Precipitation
May 2003 through April 2004

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF in Comp. (mgd)	One Day in. of Pre. (MGD/inch)	Two Day in. of Pre. (MGD/inch)	Three Day in. of Pre. (MGD/inch)	BODx Loading (mg/l)	BODx Mo. Loading (lbs/capita)	TSS Loading (mg/l)	TSS Mo. Loading (lbs/capita)	Total Effluent Flow (mgd)	BODx Loading (mg/l)	BODx Mo. Loading (lbs/capita)	TSS Loading (mg/l)	TSS Mo. Loading (lbs/capita)
2-Aug-03	0.00	0.437	0.437		0.437					0.000												
3-Aug-03	0.00	0.440	0.440		0.440					0.000												
4-Aug-03	0.00	0.433	0.433		0.433					0.000												
5-Aug-03	0.00	0.445	0.445		0.445					0.000												
6-Aug-03	0.00	0.419	0.419		0.419					0.000				284.0	0.142	138.0	0.068					
7-Aug-03	0.00	0.441	0.441		0.441					0.000												
8-Aug-03	0.01	0.415	0.415		0.415					0.000												
9-Aug-03	0.00	0.424	0.424		0.424					0.000												
10-Aug-03	0.00	0.448	0.448		0.448					0.000												
11-Aug-03	0.00	0.440	0.440		0.440					0.000												
12-Aug-03	0.00	0.435	0.435		0.435					0.000												
13-Aug-03	0.00	0.423	0.423		0.423					0.000				130.0	0.066	85.5	0.043					
14-Aug-03	0.00	0.412	0.412		0.412					0.000												
15-Aug-03	0.00	0.412	0.412		0.412					0.000												
16-Aug-03	0.00	0.429	0.429		0.429					0.000												
17-Aug-03	0.00	0.456	0.456		0.456					0.000												
18-Aug-03	0.00	0.471	0.471		0.471					0.012												
19-Aug-03	0.00	0.473	0.473		0.473					0.014												
20-Aug-03	0.00	0.425	0.425		0.425					0.000				294.0	0.149	191.0	0.097					
21-Aug-03	0.00	0.422	0.422		0.422					0.000												
22-Aug-03	0.11	0.424	0.424		0.424					0.000												
23-Aug-03	0.00	0.418	0.418		0.418					0.000												
24-Aug-03	0.00	0.422	0.422		0.422					0.000												
25-Aug-03	0.00	0.425	0.425		0.425					0.000												
26-Aug-03	0.00	0.426	0.426		0.426					0.000												
27-Aug-03	0.00	0.431	0.431		0.431					0.000				141.0	0.073	50.0	0.026					
28-Aug-03	0.00	0.422	0.422		0.422					0.000												
29-Aug-03	0.00	0.404	0.404		0.404					0.000												
30-Aug-03	0.00	0.423	0.423		0.423					0.000												
31-Aug-03	0.00	0.414	0.414		0.414		0.12	13.33	0.43	0.000												
1-Sep-03	0.00	0.465	0.465							0.006												
2-Sep-03	0.00	0.437	0.437							0.000												
3-Sep-03	0.00	0.428	0.428							0.000				138.0	0.071	68.0	0.035					
4-Sep-03	0.00	0.415	0.415							0.000												
5-Sep-03	0.00	0.421	0.421							0.000												
6-Sep-03	0.00	0.471	0.471							0.012												
7-Sep-03	0.09	0.512	0.512							0.053												
8-Sep-03	0.17	0.550	0.550							0.091												
9-Sep-03	0.51	0.597	0.597							0.138												
10-Sep-03	0.02	0.412	0.412							0.000				201.0	0.099	102.0	0.050					
11-Sep-03	0.00	0.449	0.449							0.000												
12-Sep-03	0.00	0.433	0.433							0.000												
13-Sep-03	0.00	0.436	0.436							0.000												
14-Sep-03	0.00	0.469	0.469							0.010												
15-Sep-03	0.00	0.465	0.465							0.026												
16-Sep-03	0.14	0.501	0.501							0.042												
17-Sep-03	0.00	0.469	0.469							0.010				189.0	0.106	105.0	0.059					
18-Sep-03	0.00	0.461	0.461							0.002												
19-Sep-03	0.00	0.436	0.436							0.000												
20-Sep-03	0.00	0.440	0.440							0.000												
21-Sep-03	0.00	0.470	0.470							0.011												
22-Sep-03	0.00	0.440	0.440							0.000												
23-Sep-03	0.00	0.432	0.432							0.000												
24-Sep-03	0.00	0.418	0.418							0.000				169.0	0.084	84.9	0.042					
25-Sep-03	0.00	0.405	0.405							0.000												
26-Sep-03	0.00	0.417	0.417							0.000												
27-Sep-03	0.00	0.422	0.422							0.000												
28-Sep-03	0.00	0.450	0.450							0.000												
29-Sep-03	0.00	0.442	0.442							0.000												
30-Sep-03	0.00	0.423	0.423				0.93	13.61	0.45	0.000												
1-Oct-03	0.00	0.420	0.420							0.000				265.0	0.133	163.0	0.082					
2-Oct-03	0.00	0.446	0.446							0.000												
3-Oct-03	0.00	0.422	0.422							0.000												
4-Oct-03	0.00	0.450	0.450							0.000												
5-Oct-03	0.00	0.471	0.471							0.012												
6-Oct-03	0.00	0.471	0.471							0.012												
7-Oct-03	0.53	0.462	0.462							0.003												
8-Oct-03	0.11	0.495	0.495							0.036				141.0	0.083	70.3	0.042					
9-Oct-03	0.04	0.477	0.477							0.018												
10-Oct-03	0.34	0.460	0.460							0.021												
11-Oct-03	0.00	0.576	0.576							0.117												
12-Oct-03	0.46	0.611	0.611							0.152												
13-Oct-03	0.00	0.468	0.468							0.009												
14-Oct-03	0.02	0.449	0.449							0.000												
15-Oct-03	0.25	0.591	0.591							0.132				210.0	0.148	130.0	0.092					
16-Oct-03	0.01	0.470	0.470							0.011												
17-Oct-03	0.00	0.423	0.423							0.000												
18-Oct-03	0.00	0.635	0.635							0.176												
19-Oct-03	0.70	0.682	0.682							0.223												
20-Oct-03	0.00	0.502	0.502							0.043												
21-Oct-03	0.00	0.458	0.458							0.000												
22-Oct-03	0.00	0.453	0.453							0.000				312.0	0.169	285.0	0.160					
23-Oct-03	0.00	0.437	0.437							0.000												
24-Oct-03	0.00	0.432	0.432							0.000												
25-Oct-03	0.00	0.426	0.426							0.000												
26-Oct-03	0.00	0.447	0.447							0.000												
27-Oct-03	0.00	0.429	0.429							0.000												
28-Oct-03	0.00	0.471	0.471							0.012												
29-Oct-03	0.15	0.443	0.443							0.000				142.0	0.075	46.5	0.026					
30-Oct-03	0.00	0.444	0.444							0.000												
31-Oct-03	0.00	0.414	0.414				2.61	14.86	0.48	0.000												
1-Nov-03	0.00	0.453								0.024												
2-Nov-03	0.20	0.686								0.227												

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

Summary of Daily WWTF Influent and Precipitation
May 2003 through April 2004

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL. (MG)	MO. ADF (MGD)	Inflow - ADWF /I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Loading (mg/l)	BODx Mo. Loading (lbs/capita)	TSS Loading (mg/l)	TSS Mo. Loading (lbs/capita)	Total Effluent Flow (mgd)	BODx Loading (mg/l)	BODx Mo. Loading (lbs/capita)	TSS Loading (mg/l)	TSS Mo. Loading (lbs/capita)
3-Nov-03	0.00	0.451								0.002												
4-Nov-03	0.00	0.447								0.000												
5-Nov-03	0.00	0.434								0.000				108.0	0.056	54.4	0.028					
6-Nov-03	0.00	0.440								0.000												
7-Nov-03	0.00	0.460								0.021												
8-Nov-03	0.00	0.520								0.081												
9-Nov-03	0.13	0.525								0.066												
10-Nov-03	0.00	0.449								0.000												
11-Nov-03	0.06	0.511								0.052												
12-Nov-03	0.00	0.474								0.015				242.0	0.137	139.0	0.079		10.9	0.016	16.0	0.026
13-Nov-03	0.00	0.605								0.146												
14-Nov-03	0.00	0.595								0.136												
15-Nov-03	0.23	0.691								0.232												
16-Nov-03	0.88	1.247								0.788												
17-Nov-03	0.13	0.675								0.416												
18-Nov-03	0.24	0.635								0.177												
19-Nov-03	0.79	1.114								0.655				59.6	0.079	50.9	0.068		5.0	0.010	9.0	0.018
20-Nov-03	0.29	0.800								0.341												
21-Nov-03	0.17	0.637								0.178												
22-Nov-03	0.00	0.653								0.194												
23-Nov-03	0.00	0.818								0.359												
24-Nov-03	0.28	0.657								0.208												
25-Nov-03	0.61	0.957								0.498				83.4	0.095	90.5	0.104		5.1	0.010	18.0	0.030
26-Nov-03	0.28	0.975								0.516												
27-Nov-03	0.00	0.766								0.309												
28-Nov-03	0.01	1.200								0.741												
29-Nov-03	0.79	1.350								0.891												
30-Nov-03	0.10	0.634					5.19	21.33	0.71	0.375												
1-Dec-03	0.05	0.807								0.348												
2-Dec-03	0.10	0.866								0.407												
3-Dec-03	0.24	0.771								0.312				81.7	0.075	56.7	0.052		7.8	0.016	19.5	0.039
4-Dec-03	0.16	0.945								0.486												
5-Dec-03	0.52	1.370								0.911												
6-Dec-03	0.00	1.070								0.611												
7-Dec-03	1.54	1.733								1.274												
8-Dec-03	0.02	1.009								0.550												
9-Dec-03	0.26	1.417								0.958												
10-Dec-03	0.28	1.217								0.758				96.3	0.140	62.5	0.091		6.6	0.014	23.8	0.052
11-Dec-03	0.05	1.193								0.734												
12-Dec-03	0.35	1.271								0.812												
13-Dec-03	1.36	4.400								3.941												
14-Dec-03	0.75	2.372								1.913												
15-Dec-03	0.00	1.297								0.838												
16-Dec-03	0.16	1.149								0.690												
17-Dec-03	0.03	1.005								0.546				126.0	0.151	106.0	0.127		8.9	0.018	22.7	0.046
18-Dec-03	0.00	0.951								0.492												
19-Dec-03	0.11	0.924								0.465												
20-Dec-03	0.00	0.991								0.532												
21-Dec-03	0.29	0.869								0.410												
22-Dec-03	0.00	0.885								0.426				71.0	0.075	32.5	0.035		13.5	0.027	25.7	0.052
23-Dec-03	0.01	1.078								0.619												
24-Dec-03	0.95	2.342								1.583												
25-Dec-03	0.00	1.491								1.032												
26-Dec-03	0.84	1.231								0.772												
27-Dec-03	0.00	2.093								1.634												
28-Dec-03	1.25	2.631								2.172												
29-Dec-03	0.90	2.268								1.809				26.8	0.073	11.6	0.031		7.8	0.027	19.3	0.066
30-Dec-03	0.00	1.574								1.115												
31-Dec-03	0.28	2.340					10.30	45.56	1.47	1.881												
1-Jan-04	0.80	2.363		2.363						1.904												
2-Jan-04	0.00	2.368		2.368						1.927												
3-Jan-04	0.00	1.995		1.995						1.536												
4-Jan-04	0.32	1.733		1.733						1.274												
5-Jan-04	0.02	1.164		1.164						0.725												
6-Jan-04	0.64	1.357		1.357						0.898												
7-Jan-04	0.79	2.257		2.257						1.798				43.0	0.116	33.3	0.090		7.1	0.025	19.8	0.070
8-Jan-04	0.44	3.088		3.088						2.629												
9-Jan-04	0.22	2.447		2.447						1.988												
10-Jan-04	0.09	2.081		2.081						1.622												
11-Jan-04	0.00	1.564		1.564						1.105												
12-Jan-04	0.04	1.369		1.369						0.910												
13-Jan-04	0.01	1.501		1.501						1.042												
14-Jan-04	0.19	1.546		1.546						1.089				75.3	0.139	71.7	0.133		12.0	0.040	7.4	0.025
15-Jan-04	0.02	1.312		1.312						0.853												
16-Jan-04	0.01	1.164		1.164						0.705												
17-Jan-04	0.00	1.156		1.156						0.697												
18-Jan-04	0.31	1.312		1.312						0.853												
19-Jan-04	0.06	1.187		1.187						0.728												
20-Jan-04	0.02	1.122		1.122						0.663												
21-Jan-04	0.00	1.115		1.115						0.656				137.0	0.183	149.0	0.199		11.7	0.037	12.4	0.039
22-Jan-04	0.00	1.197		1.197						0.738												
23-Jan-04	0.22	1.425		1.425						0.966												
24-Jan-04	0.16	1.349		1.349						0.890												
25-Jan-04	0.03	1.993		1.993						1.534												
26-Jan-04	0.00	1.968		1.968						1.509												
27-Jan-04	0.36	1.925		1.925						1.466												
28-Jan-04	0.22	1.814		1.814						1.355				71.1	0.154	92.9	0.201		9.1	0.028	15.0	0.045
29-Jan-04	0.71	3.151		3.151						2.692												
30-Jan-04	0.93	2.540		2.540						2.081												
31-Jan-04	0.41	2.050		2.050			7.02	54.65	1.76	1.591												
1-Feb-04	0.12	1.645		1.645						1.188												
2-Feb-04	0.33	1.452		1.452						0.993												
3-Feb-04	0.00	1.094		1.094						0.635												

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0026

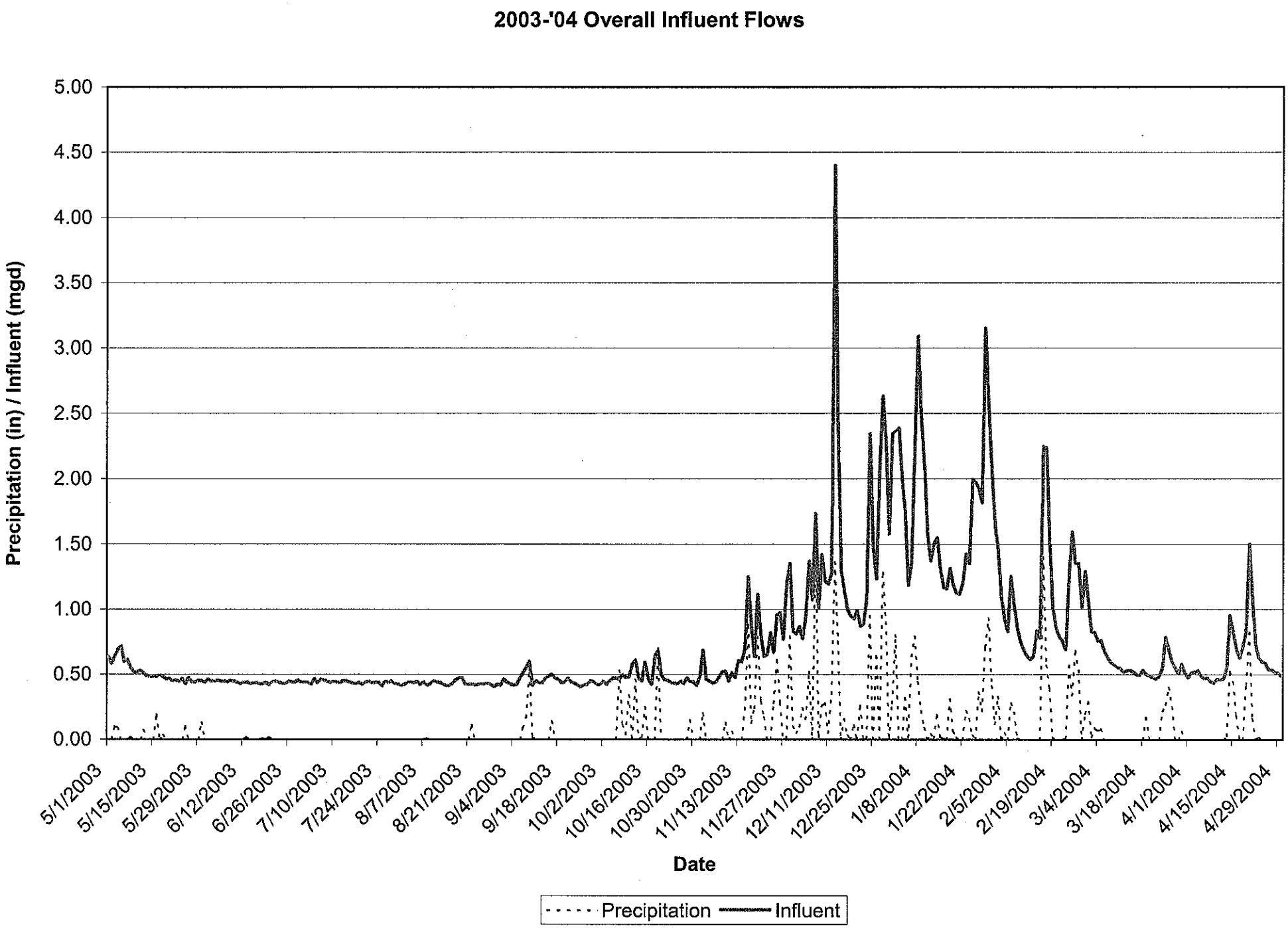
Summary of Daily WWTF Influent and Precipitation
May 2003 through April 2004

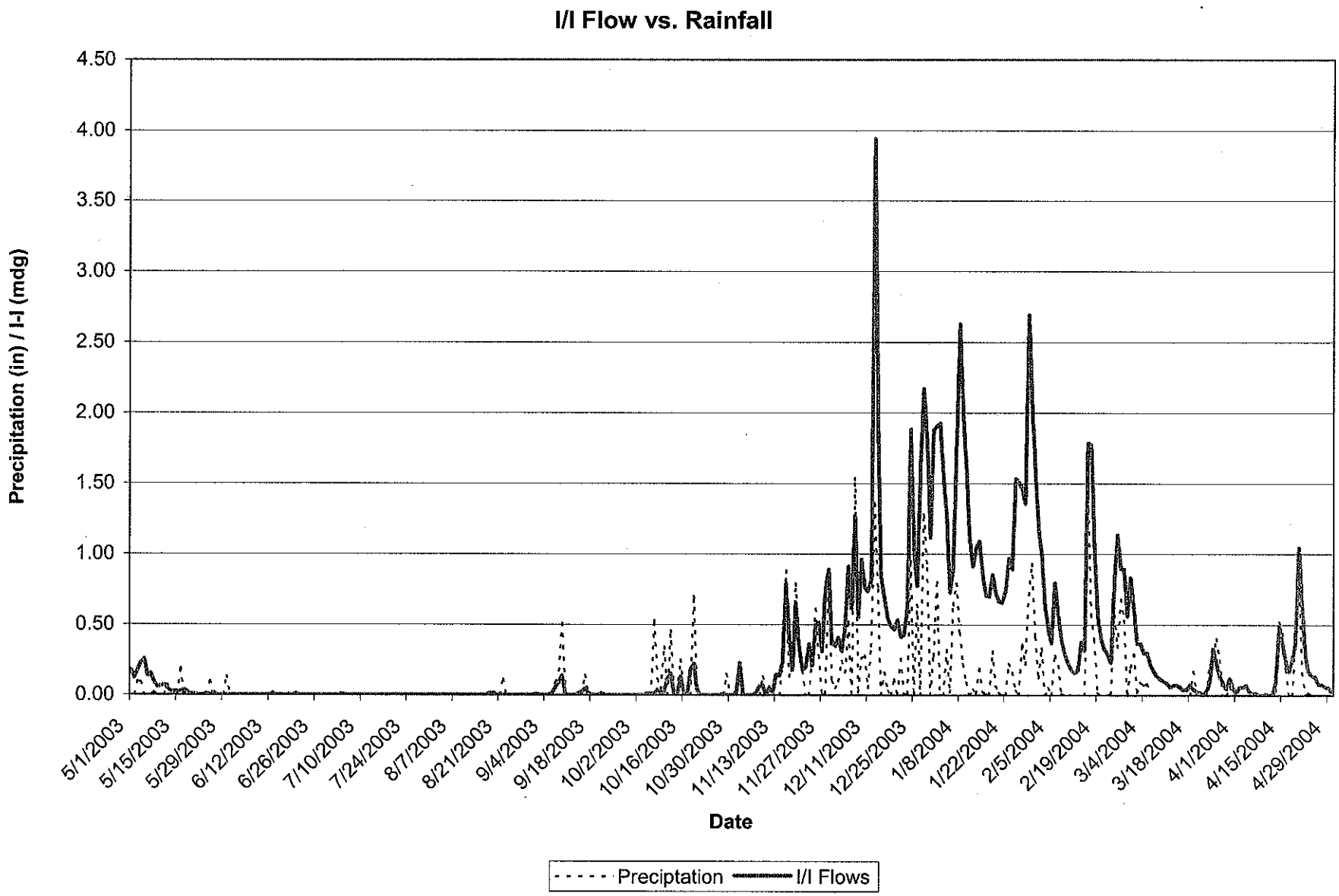
DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Loading (mg/l)	BODx Mo. Loading (lbs/capita)	TSS Loading (mg/l)	TSS Mo. Loading (lbs/capita)	Total Effluent Flow (mgd)	BODx Loading (mg/l)	BODx Mo. Loading (lbs/capita)	TSS Loading (mg/l)	TSS Mo. Loading (lbs/capita)
4-Feb-04	0.05	0.928		0.928						0.469				87.8	0.097	109.0	0.121		9.3	0.019	7.2	0.014
5-Feb-04	0.00	0.827		0.827						0.368												
6-Feb-04	0.28	1.253		1.253						0.794												
7-Feb-04	0.21	1.023		1.023						0.564												
8-Feb-04	0.01	0.854		0.854						0.395												
9-Feb-04	0.00	0.748		0.748						0.289												
10-Feb-04	0.00	0.690		0.690						0.231												
11-Feb-04	0.00	0.639		0.639						0.180				128.0	0.096	112.0	0.086		3.1	0.006	14.0	0.028
12-Feb-04	0.00	0.614		0.614						0.155												
13-Feb-04	0.00	0.636		0.636						0.177												
14-Feb-04	0.00	0.834		0.834						0.375												
15-Feb-04	0.00	0.776		0.776						0.317												
16-Feb-04	1.40	2.245		2.245						1.786												
17-Feb-04	0.57	2.233		2.233						1.774												
18-Feb-04	0.39	1.515		1.515						1.056				71.6	0.130	69.7	0.121		3.0	0.006	18.0	0.037
19-Feb-04	0.02	1.017		1.017						0.558												
20-Feb-04	0.00	0.859		0.859						0.399												
21-Feb-04	0.00	0.786		0.786						0.327												
22-Feb-04	0.00	0.753		0.753						0.294												
23-Feb-04	0.01	0.689		0.689						0.230												
24-Feb-04	0.57	1.254		1.254						0.795												
25-Feb-04	0.34	1.593		1.593						1.134				113.0	0.215	141.0	0.269		3.9	0.005	15.6	0.020
26-Feb-04	0.68	1.353		1.353						0.894												
27-Feb-04	0.53	1.350		1.350						0.891												
28-Feb-04	0.00	1.016		1.016						0.557												
29-Feb-04	0.20	1.291		1.291			5.71	31.97	1.10	0.532												
1-Mar-04	0.29	1.062		1.062						0.603												
2-Mar-04	0.02	0.825		0.825						0.366												
3-Mar-04	0.09	0.824		0.824						0.365				112.0	0.110	120.0	0.118		7.9	0.011	21.0	0.029
4-Mar-04	0.07	0.755		0.755						0.296												
5-Mar-04	0.08	0.758		0.758						0.299												
6-Mar-04	0.00	0.676		0.676						0.217												
7-Mar-04	0.00	0.631		0.631						0.172												
8-Mar-04	0.00	0.592		0.592						0.133												
9-Mar-04	0.00	0.572		0.572						0.113												
10-Mar-04	0.00	0.555		0.555						0.096				245.0	0.163	184.0	0.122		10.7	0.016	22.0	0.032
11-Mar-04	0.00	0.544		0.544						0.085												
12-Mar-04	0.00	0.516		0.516						0.057												
13-Mar-04	0.00	0.529		0.529						0.070												
14-Mar-04	0.00	0.531		0.531						0.072												
15-Mar-04	0.00	0.518		0.518						0.059												
16-Mar-04	0.00	0.497		0.497						0.038												
17-Mar-04	0.00	0.496		0.496						0.037				403.0	0.239	502.0	0.298		10.4	0.014	13.5	0.018
18-Mar-04	0.00	0.531		0.531						0.072												
19-Mar-04	0.17	0.498		0.498						0.039												
20-Mar-04	0.00	0.486		0.486						0.027												
21-Mar-04	0.00	0.476		0.476						0.017												
22-Mar-04	0.00	0.463		0.463						0.004												
23-Mar-04	0.00	0.482		0.482						0.023												
24-Mar-04	0.22	0.548		0.548						0.089				204.0	0.134	194.0	0.127		11.4	0.014	8.3	0.010
25-Mar-04	0.27	0.787		0.787						0.328												
26-Mar-04	0.40	0.691		0.691						0.232												
27-Mar-04	0.25	0.593		0.593						0.134												
28-Mar-04	0.00	0.549		0.549						0.090												
29-Mar-04	0.00	0.503		0.503						0.044												
30-Mar-04	0.06	0.576		0.576						0.118												
31-Mar-04	0.00	0.513		0.513		0.513	1.92	16.58	0.60	0.054				177.0	0.100	208.0	0.118		24.1	0.025	12.9	0.014
1-Apr-04	0.00	0.474		0.474		0.474				0.015												
2-Apr-04	0.00	0.514		0.514		0.514				0.055												
3-Apr-04	0.00	0.517		0.517		0.517				0.058												
4-Apr-04	0.00	0.529		0.529		0.529				0.070												
5-Apr-04	0.00	0.487		0.487		0.487				0.028												
6-Apr-04	0.00	0.470		0.470		0.470				0.011												
7-Apr-04	0.00	0.472		0.472		0.472				0.013				234.0	0.132	366.0	0.207					
8-Apr-04	0.00	0.444		0.444		0.444				0.000												
9-Apr-04	0.00	0.432		0.432		0.432				0.000												
10-Apr-04	0.00	0.465		0.465		0.465				0.006												
11-Apr-04	0.00	0.456		0.456		0.456				0.000												
12-Apr-04	0.00	0.465		0.465		0.465				0.006												
13-Apr-04	0.03	0.547		0.547		N/A				0.068	2.8											
14-Apr-04	0.52	0.953		0.953		N/A				0.494	1.0	1.1		219.0	0.250	295.0	0.336					
15-Apr-04	0.44	0.826		0.826		N/A				0.367	0.8	0.9	1.0									
16-Apr-04	0.18	0.698		0.698		N/A				0.239	1.3	1.0	1.0									
17-Apr-04	0.00	0.624		0.624		0.624				0.165			1.2									
18-Apr-04	0.00	0.710		0.710		0.710				0.251												
19-Apr-04	0.42	0.833		0.833		N/A				0.374	0.9											
20-Apr-04	0.82	1.499		1.499		N/A				1.040	1.3	1.1										
21-Apr-04	0.18	1.069		1.069		N/A				0.630	3.9	1.7	1.5	83.7	0.109	109.0	0.142					
22-Apr-04	0.00	0.735		0.735		0.735				0.276			2.0									
23-Apr-04	0.02	0.627		0.627		N/A				0.168	8.4											
24-Apr-04	0.00	0.595		0.595		0.595				0.136												
25-Apr-04	0.00	0.587		0.587		0.587				0.128												
26-Apr-04	0.00	0.537		0.537		0.537				0.078												
27-Apr-04	0.00	0.535		0.535		0.535				0.076												
28-Apr-04	0.00	0.515		0.515		0.515				0.056				216.0	0.133	296.0	0.182					
29-Apr-04	0.00	0.512		0.512		0.512				0.053												
30-Apr-04	0.00	0.484		0.484		0.484	2.59	18.63	0.62	0.025												
Total	37.17	275.13	84.41	123.83	40.09	23.71	[illegible]	[illegible]	n/a	110.532												
Mean	0.10	0.75	0.46	1.02	0.44	0.52	n/a	n/a	[illegible]	0.30				163.27								
															0.116	131.34	0.100		8.40	0.016	14.68	0.030
Maximum	1.54	4.46	0.71	3.15	0.47	0.74	10.30	54.65	1.76	3.84				403.00	0.250	502.00	0.336		24.10	0.040	25.70	0.070
										Total April and May I/I (mgd/in)	31.1	7.9	10.1									
										Avg. WW I/I (mgd/in)	1.9	1.3	1.7									

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
OEA Project Number INDP0000-0028

Summary of Daily WWTF Influent and Precipitation
May 2003 through April 2004

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Loading (mg/l)	BODx Mo. Loading (lbs/capita)	TSS Loading (mg/l)	TSS Mo. Loading (lbs/capita)	Total Effluent Flow (mgd)	BODx Loading (mg/l)	BODx Mo. Loading (lbs/capita)	TSS Loading (mg/l)	TSS Mo. Loading (lbs/capita)
												Avg. Dry Weather Infl. Conc. (mg / l)		191.4	0.102	122.1	0.066					
												Avg. Wet Weather Infl. Conc. (mg / l)		135.1	0.102	140.6	0.134					


2003-'04 Overall Influent Flows
Precipitation (in) / Influent (mgd)
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
5/1/2003
5/15/2003
5/29/2003
6/12/2003
6/26/2003
7/10/2003
7/24/2003
8/7/2003
8/21/2003
9/4/2003
9/18/2003
10/2/2003
10/16/2003
10/30/2003
11/13/2003
11/27/2003
12/11/2003
12/25/2003
1/8/2004
1/22/2004
2/5/2004
2/19/2004
3/4/2004
3/18/2004
4/1/2004
4/15/2004
4/29/2004
Date
Precipitation
Influent


I/I Flow vs. Rainfall
Precipitation (in) / I-I (mdg)
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
5/1/2003
5/15/2003
5/29/2003
6/12/2003
6/26/2003
7/10/2003
7/24/2003
8/7/2003
8/21/2003
9/4/2003
9/18/2003
10/2/2003
10/16/2003
10/30/2003
11/13/2003
11/27/2003
12/11/2003
12/25/2003
1/8/2004
1/22/2004
2/5/2004
2/19/2004
3/4/2004
3/18/2004
4/1/2004
4/15/2004
4/29/2004
Date
Preciptation
I/I Flows

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028
Summary of WWTF Influent, Effluent and Performance
May 2002 through April 2003

2002 Population (Est)	**6580**
2003 Population (Est)	**6850**
Average (Est) =	***6715***

OVERALL YEAR FLOW AND LOADS

Parameter	Units	Year Value	Per Capita (gpcpd)
Average Daily Infiltration	mgd	0.1	
Average Daily Exfiltration	mgd	0.0	
BOD5 Loading	lbs/day	838	
Avg. Daily Domesitc Flow (ADF)	mgd	0.76	113
Max Monthly Dry Weather Flow (MMDWF)	mgd	0.81	121
Max Monthly Wet Weather Flow (MMWWF)	mgd	2.45	364
Peak Wet Weather Hydraulic Flow (WWPIF)	mgd	8.33	1241

		Data May '03 - Ap' 04 Flows (mgd)	(gpcpd)	Comments
Avg. Dry Weather Daily Q (May - Oct)	**ADWF**	0.76	113	Average Dry Weather Flow
Peak Dry Weather Q (May - Oct)	**PDWF**	1.30	194	Peak Dry Weather Flow
Avg. Daily Wet Weather Q (Jan - April)	**AWWF**	1.53	228	Average Daily Q during the Winter Months
Peak Wet Weather Q (Jan - April)	**PWWF**	5.42	807	Peak Wet Weather Flow
Average Daily Q (May-Ap)	**AADF**	1.14	170	Average Annual Daily Flow
Peak Daily Annual Q (May - Ap)	**PDAF**	7.02	1046	Maximum Day Q during the Year - **NOT** 5-yr PDAF
Peak Daily I/I Flow (May - Ap)		6.26		Peak Daily Flow after ADWF is Subtracted
Max. Mo. Dry Weather Q (May-Oct)	**MMDWF**	0.81	121	MMDWF invariably occurs in May
Max. Mo. Wet Weather Q (Nov - Ap)	**MMWWF**	2.45	364	MMWWF invariably occurs in January
Peak Instantaneous Flow	**PIF**	8.33	1241	*5788 gpm* (ADWF *3.0) + Ap/May I/I Correlation *5-Yr 24 Hr Storm + Avg Daily Infiltration
Avg. BOD5 Loading Per Day (lbs/day)		838		
Avg. TSS Loading Per Day (lbs/day)		726		
Diurnal Peaking Factor		3.0	n/a	
5-YR 24 HR DESIGN STORM (in)		3.5	n/a	NOAA Atlas 2, Volume X, Figure 26
Avg. Daily Infiltration (mdg)		0.1	n/a	ADF during High Groundwater (Ap/May) minus ADF no Rain (June-Aug)
Exist. Yearly I/I CORR. (mgd/in rainfall)		3.01	n/a	Sum of Yearly Daily Influent - Daily ADWF / Total Year Rainfall
Exist. May and April I/I CORR. (mgd/in rainfall)		1.71	n/a	Avg. (Sum of April and May Daily Influent - Daily ADWF / April and May Rainfall)

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

Summary of Daily WWTF Influent and Precipitation
May 2003 through April 2004

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
1-May-02	0.00	0.763	0.763			0.763				0.001					
2-May-02	0.00	0.835	0.835			0.835				0.073					
3-May-02	0.00	0.794	0.794			0.794				0.032					
4-May-02	0.00	0.768	0.768			0.768				0.006					
5-May-02	0.00	0.777	0.777			0.777				0.015					
6-May-02	0.02	0.799	0.799			N/A				0.037	1.9				
7-May-02	0.00	0.837	0.837			0.837				0.075					
8-May-02	0.00	0.782	0.782			0.782				0.020					
9-May-02	0.00	0.754	0.754			0.754				0.000					
10-May-02	0.00	0.820	0.820			0.820				0.058					
11-May-02	0.00	0.746	0.746			0.746				0.000					
12-May-02	0.00	0.782	0.782			0.782				0.020					
13-May-02	0.05	0.845	0.845			N/A				0.083	1.7				
14-May-02	0.00	0.771	0.771			0.771				0.009					
15-May-02	0.00	0.750	0.750			0.750				0.000					
16-May-02	0.00	0.847	0.847			0.847				0.085					
17-May-02	0.32	0.782	0.782			N/A				0.020	0.1				
18-May-02	0.00	0.808	0.808			0.808				0.046					
19-May-02	0.28	0.935	0.935			N/A				0.173	0.6				
20-May-02	0.28	0.871	0.871			N/A				0.109	0.4	0.5			
21-May-02	0.06	0.779	0.779			N/A				0.017	0.3	0.4	0.5		
22-May-02	0.09	0.799	0.799			N/A				0.037	0.4	0.4	0.4		
23-May-02	0.00	0.759	0.759			0.759				0.000					
24-May-02	0.00	0.733	0.733			0.733				0.000					
25-May-02	0.00	0.737	0.737			0.737				0.000					
26-May-02	0.00	0.738	0.738			0.738				0.000					
27-May-02	0.12	0.913	0.913			N/A				0.151	1.3				
28-May-02	0.16	1.127	1.127			N/A				0.366	2.3	1.8			
29-May-02	0.22	0.938	0.938			N/A				0.176	0.8	1.4	1.4		
30-May-02	0.00	0.831	0.831			0.831				0.069					
31-May-02	0.00	0.777	0.777			0.777	1.60	25.20	0.81	0.015				0.121	0.116
1-Jun-02	0.00	0.781	0.781		0.781					0.019					
2-Jun-02	0.00	0.761	0.761		0.761					0.000					
3-Jun-02	0.00	0.720	0.720		0.720					0.000					
4-Jun-02	0.00	0.774	0.774		0.774					0.012					
5-Jun-02	0.00	0.817	0.817		0.817					0.055					
6-Jun-02	0.00	0.781	0.781		0.781					0.019					
7-Jun-02	0.00	0.826	0.826		0.826					0.064					
8-Jun-02	0.26	0.851	0.851		0.851					0.089					
9-Jun-02	0.00	0.861	0.861		0.861					0.099					
10-Jun-02	0.00	0.785	0.785		0.785					0.023					
11-Jun-02	0.00	0.746	0.746		0.746					0.000					
12-Jun-02	0.00	0.750	0.750		0.750					0.000					
13-Jun-02	0.00	0.748	0.748		0.748					0.000					
14-Jun-02	0.00	0.805	0.805		0.805					0.043					
15-Jun-02	0.00	0.752	0.752		0.752					0.000					
16-Jun-02	0.00	0.857	0.857		0.857					0.095					
17-Jun-02	0.13	0.923	0.923		0.923					0.161					
18-Jun-02	0.12	0.871	0.871		0.871					0.109					
19-Jun-02	0.00	0.810	0.810		0.810					0.048					
20-Jun-02	0.00	0.807	0.807		0.807					0.045					
21-Jun-02	0.00	0.735	0.735		0.735					0.000					
22-Jun-02	0.00	0.744	0.744		0.744					0.000					
23-Jun-02	0.00	0.714	0.714		0.714					0.000					
24-Jun-02	0.00	0.710	0.710		0.710					0.000					
25-Jun-02	0.00	0.733	0.733		0.733					0.000					
26-Jun-02	0.00	0.730	0.730		0.730					0.000					
27-Jun-02	0.00	0.807	0.807		0.807					0.045					

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Summary of Daily WWTF Influent and Precipitation
May 2003 through April 2004

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/Inch)	Two Day In. of Pre. (MGD/Inch)	Three Day In. of Pre. (MGD/Inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
28-Jun-02	0.25	1.060	1.060		1.060					0.298					
29-Jun-02	0.25	0.845	0.845		0.845					0.083					
30-Jun-02	0.25	0.787	0.787		0.787		1.26	23.89	0.80	0.025				0.107	0.075
1-Jul-02	0.00	0.734	0.734		0.734					0.000					
2-Jul-02	0.00	0.761	0.761		0.761					0.000					
3-Jul-02	0.00	0.697	0.697		0.697					0.000					
4-Jul-02	0.00	0.783	0.783		0.783					0.021					
5-Jul-02	0.00	0.733	0.733		0.733					0.000					
6-Jul-02	0.00	0.753	0.753		0.753					0.000					
7-Jul-02	0.00	0.749	0.749		0.749					0.000					
8-Jul-02	0.03	0.744	0.744		0.744					0.000					
9-Jul-02	0.00	0.713	0.713		0.713					0.000					
10-Jul-02	0.00	0.780	0.780		0.780					0.018					
11-Jul-02	0.00	0.751	0.751		0.751					0.000					
12-Jul-02	0.00	0.744	0.744		0.744					0.000					
13-Jul-02	0.00	0.767	0.767		0.767					0.005					
14-Jul-02	0.00	0.702	0.702		0.702					0.000					
15-Jul-02	0.00	0.734	0.734		0.734					0.000					
16-Jul-02	0.00	0.671	0.671		0.671					0.000					
17-Jul-02	0.00	0.763	0.763		0.763					0.001					
18-Jul-02	0.00	0.732	0.732		0.732					0.000					
19-Jul-02	0.00	0.728	0.728		0.728					0.000					
20-Jul-02	0.00	0.728	0.728		0.728					0.000					
21-Jul-02	0.00	0.768	0.768		0.768					0.006					
22-Jul-02	0.00	0.714	0.714		0.714					0.000					
23-Jul-02	0.00	0.709	0.709		0.709					0.000					
24-Jul-02	0.00	0.719	0.719		0.719					0.000					
25-Jul-02	0.00	0.720	0.720		0.720					0.000					
26-Jul-02	0.00	0.784	0.784		0.784					0.022					
27-Jul-02	0.00	0.723	0.723		0.723					0.000					
28-Jul-02	0.00	0.749	0.749		0.749					0.000					
29-Jul-02	0.00	0.739	0.739		0.739					0.000					
30-Jul-02	0.00	0.739	0.739		0.739					0.000					
31-Jul-02	0.00	0.765	0.765		0.765		0.03	22.90	0.74	0.003				0.074	0.080
1-Aug-02	0.00	0.752	0.752		0.752					0.000					
2-Aug-02	0.00	0.706	0.706		0.706					0.000					
3-Aug-02	0.00	0.695	0.695		0.695					0.000					
4-Aug-02	0.07	0.757	0.757		0.757					0.000					
5-Aug-02	0.03	0.756	0.756		0.756					0.000					
6-Aug-02	0.00	0.695	0.695		0.695					0.000					
7-Aug-02	0.00	0.723	0.723		0.723					0.000					
8-Aug-02	0.00	0.693	0.693		0.693					0.000					
9-Aug-02	0.00	0.497	0.497		0.497					0.000					
10-Aug-02	0.00	0.727	0.727		0.727					0.000					
11-Aug-02	0.00	0.787	0.787		0.787					0.025					
12-Aug-02	0.00	0.728	0.728		0.728					0.000					
13-Aug-02	0.00	0.797	0.797		0.797					0.035					
14-Aug-02	0.00	0.721	0.721		0.721					0.000					
15-Aug-02	0.00	0.700	0.700		0.700					0.000					
16-Aug-02	0.00	0.653	0.653		0.653					0.000					
17-Aug-02	0.00	0.664	0.664		0.664					0.000					
18-Aug-02	0.00	0.618	0.618		0.618					0.000					
19-Aug-02	0.00	0.681	0.681		0.681					0.000					
20-Aug-02	0.36	0.675	0.675		0.675					0.000					
21-Aug-02	0.00	0.684	0.684		0.684					0.000					
22-Aug-02	0.00	0.700	0.700		0.700					0.000					
23-Aug-02	0.00	0.653	0.653		0.653					0.000					
24-Aug-02	0.00	1.302	1.302		1.302					0.540					

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25-Aug-02	0.00	0.797	0.797		0.797					0.035					
26-Aug-02	0.00	0.729	0.729		0.729					0.000					
27-Aug-02	0.00	0.720	0.720		0.720					0.000					
28-Aug-02	0.00	0.798	0.798		0.798					0.036					
29-Aug-02	0.00	0.872	0.872		0.872					0.110					
30-Aug-02	0.00	0.931	0.931		0.931					0.169					
31-Aug-02	0.00	0.748	0.748		0.748		0.46	22.96	0.74	0.000				0.157	0.104
1-Sep-02	0.00	0.702	0.702							0.000					
2-Sep-02	0.00	0.752	0.752							0.000					
3-Sep-02	0.00	0.779	0.779							0.017					
4-Sep-02	0.00	0.684	0.684							0.000					
5-Sep-02	0.00	0.727	0.727							0.000					
6-Sep-02	0.01	0.740	0.740							0.000					
7-Sep-02	0.07	0.717	0.717							0.000					
8-Sep-02	0.00	0.702	0.702							0.000					
9-Sep-02	0.00	0.659	0.659							0.000					
10-Sep-02	0.00	0.728	0.728							0.000					
11-Sep-02	0.00	0.633	0.633							0.000					
12-Sep-02	0.00	0.741	0.741							0.000					
13-Sep-02	0.00	0.678	0.678							0.000					
14-Sep-02	0.00	0.723	0.723							0.000					
15-Sep-02	0.00	0.732	0.732							0.000					
16-Sep-02	0.03	0.830	0.830							0.068					
17-Sep-02	0.36	0.795	0.795							0.033					
18-Sep-02	0.00	0.654	0.654							0.000					
19-Sep-02	0.00	0.754	0.754							0.000					
20-Sep-02	0.00	0.664	0.664							0.000					
21-Sep-02	0.00	0.655	0.655							0.000					
22-Sep-02	0.00	0.623	0.623							0.000					
23-Sep-02	0.00	0.637	0.637							0.000					
24-Sep-02	0.00	0.641	0.641							0.000					
25-Sep-02	0.00	0.615	0.615							0.000					
26-Sep-02	0.00	0.604	0.604							0.000					
27-Sep-02	0.00	0.638	0.638							0.000					
28-Sep-02	0.00	0.683	0.683							0.000					
29-Sep-02	0.15	0.735	0.735							0.000					
30-Sep-02	0.26	0.675	0.675				0.88	20.90	0.70	0.000				0.151	0.100
1-Oct-02	0.00	0.733	0.733							0.000					
2-Oct-02	0.00	0.749	0.749							0.000					
3-Oct-02	0.23	0.798	0.798							0.036					
4-Oct-02	0.03	0.848	0.848							0.086					
5-Oct-02	0.00	0.753	0.753							0.000					
6-Oct-02	0.00	1.031	1.031							0.269					
7-Oct-02	0.00	0.839	0.839							0.077					
8-Oct-02	0.00	0.792	0.792							0.030					
9-Oct-02	0.00	0.768	0.768							0.006					
10-Oct-02	0.00	0.766	0.766							0.004					
11-Oct-02	0.00	0.738	0.738							0.000					
12-Oct-02	0.00	0.796	0.796							0.034					
13-Oct-02	0.00	0.813	0.813							0.051					
14-Oct-02	0.00	0.791	0.791							0.029					
15-Oct-02	0.00	0.811	0.811							0.049					
16-Oct-02	0.00	0.736	0.736							0.000					
17-Oct-02	0.00	0.754	0.754							0.000					
18-Oct-02	0.00	0.735	0.735							0.000					
19-Oct-02	0.00	0.789	0.789							0.027					
20-Oct-02	0.00	0.838	0.838							0.076					
21-Oct-02	0.28	0.806	0.806							0.044					

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22-Oct-02	0.00	0.777	0.777							0.015					
23-Oct-02	0.00	0.772	0.772							0.010					
24-Oct-02	0.00	0.805	0.805							0.043					
25-Oct-02	0.00	0.734	0.734							0.000					
26-Oct-02	0.00	0.711	0.711							0.000					
27-Oct-02	0.01	0.831	0.831							0.069					
28-Oct-02	0.00	0.795	0.795							0.033					
29-Oct-02	0.00	0.741	0.741							0.000					
30-Oct-02	0.00	0.764	0.764							0.002					
31-Oct-02	0.00	0.711	0.711				0.55	24.33	0.78	0.000				0.120	0.098
1-Nov-02	0.00	0.780								0.018					
2-Nov-02	0.00	0.787								0.025					
3-Nov-02	0.00	0.741								0.000					
4-Nov-02	0.00	0.724								0.000					
5-Nov-02	0.00	0.760								0.000					
6-Nov-02	0.08	0.818								0.056					
7-Nov-02	0.10	1.123								0.361					
8-Nov-02	0.89	1.018								0.256					
9-Nov-02	1.05	1.511								0.749					
10-Nov-02	0.37	1.147								0.385					
11-Nov-02	0.36	1.130								0.368					
12-Nov-02	0.37	1.079								0.317					
13-Nov-02	0.19	1.050								0.288					
14-Nov-02	0.20	0.928								0.166					
15-Nov-02	0.00	0.846								0.084					
16-Nov-02	0.24	0.990								0.228					
17-Nov-02	0.05	0.915								0.153					
18-Nov-02	0.06	0.828								0.066					
19-Nov-02	0.02	0.830								0.068					
20-Nov-02	0.00	0.806								0.044					
21-Nov-02	0.00	0.822								0.060					
22-Nov-02	0.02	0.843								0.081					
23-Nov-02	0.00	0.906								0.144					
24-Nov-02	0.21	0.896								0.134					
25-Nov-02	0.00	0.827								0.065					
26-Nov-02	0.00	0.847								0.085					
27-Nov-02	0.00	0.783								0.021					
28-Nov-02	0.00	0.759								0.000					
29-Nov-02	0.00	0.753								0.000					
30-Nov-02	0.00	0.749					4.21	27.00	0.90	0.000				0.141	0.139
1-Dec-02	0.00	0.825								0.063					
2-Dec-02	0.00	0.797								0.035					
3-Dec-02	0.00	0.806								0.044					
4-Dec-02	0.28	0.943								0.181					
5-Dec-02	0.02	0.825								0.063					
6-Dec-02	0.00	0.797								0.035					
7-Dec-02	0.00	0.840								0.078					
8-Dec-02	0.00	0.787								0.025					
9-Dec-02	0.03	0.924								0.162					
10-Dec-02	0.73	0.993								0.231					
11-Dec-02	0.98	1.492								0.730					
12-Dec-02	0.61	1.958								1.196					
13-Dec-02	0.63	1.589								0.827					
14-Dec-02	0.63	1.761								0.999					
15-Dec-02	1.00	2.308								1.546					
16-Dec-02	1.53	1.947								1.185					
17-Dec-02	0.19	1.583								0.821					
18-Dec-02	0.30	1.410								0.648					

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19-Dec-02	0.28	1.238								0.476					
20-Dec-02	0.15	2.292								1.530					
21-Dec-02	0.35	1.995								1.233					
22-Dec-02	0.34	1.492								0.730					
23-Dec-02	0.03	1.232								0.470					
24-Dec-02	0.12	1.429								0.667					
25-Dec-02	0.14	2.376								1.614					
26-Dec-02	0.14	4.331								3.569					
27-Dec-02	1.15	5.414								4.652					
28-Dec-02	0.26	5.837								5.075					
29-Dec-02	0.25	5.228								4.466					
30-Dec-02	1.52	7.024								6.262					
31-Dec-02	1.00	3.982					12.66	66.46	2.14	3.220				0.074	0.076
1-Jan-03	0.15	1.721		1.721						0.959					
2-Jan-03	0.56	1.921		1.921						1.159					
3-Jan-03	0.63	1.702		1.702						0.940					
4-Jan-03	0.64	2.587		2.587						1.825					
5-Jan-03	0.37	1.515		1.515						0.753					
6-Jan-03	0.00	1.143		1.143						0.381					
7-Jan-03	0.00	1.338		1.338						0.576					
8-Jan-03	0.00	1.834		1.834						1.072					
9-Jan-03	0.00	1.603		1.603						0.841					
10-Jan-03	0.00	1.208		1.208						0.446					
11-Jan-03	0.00	2.014		2.014						1.252					
12-Jan-03	1.55	5.206		5.206						4.444					
13-Jan-03	0.75	4.986		4.986						4.224					
14-Jan-03	0.06	5.145		5.145						4.383					
15-Jan-03	0.00	5.416		5.416						4.654					
16-Jan-03	0.00	4.516		4.516						3.754					
17-Jan-03	0.00	2.191		2.191						1.429					
18-Jan-03	0.00	3.102		3.102						2.340					
19-Jan-03	0.00	2.634		2.634						1.872					
20-Jan-03	0.00	1.868		1.868						1.106					
21-Jan-03	0.03	0.969		0.969						0.207					
22-Jan-03	0.65	1.355		1.355						0.593					
23-Jan-03	0.14	1.136		1.136						0.374					
24-Jan-03	0.34	1.347		1.347						0.585					
25-Jan-03	0.32	1.650		1.650						0.888					
26-Jan-03	0.33	1.717		1.717						0.955					
27-Jan-03	0.00	1.175		1.175						0.413					
28-Jan-03	0.00	1.065		1.065						0.303					
29-Jan-03	0.55	2.721		2.721						1.959					
30-Jan-03	1.12	4.081		4.081						3.319					
31-Jan-03	1.59	4.958		4.958			9.78	75.82	2.45	4.196				0.197	0.214
1-Feb-03	0.10	2.012		2.012						1.250					
2-Feb-03	0.08	1.442		1.442						0.680					
3-Feb-03	0.00	1.170		1.170						0.408					
4-Feb-03	0.00	1.147		1.147						0.385					
5-Feb-03	0.00	1.075		1.075						0.313					
6-Feb-03	0.00	1.085		1.085						0.323					
7-Feb-03	0.00	1.076		1.076						0.314					
8-Feb-03	0.00	1.672		1.672						0.910					
9-Feb-03	0.00	0.958		0.958						0.196					
10-Feb-03	0.00	1.017		1.017						0.255					
11-Feb-03	0.00	0.939		0.939						0.177					
12-Feb-03	0.00	0.951		0.951						0.189					
13-Feb-03	0.00	0.958		0.958						0.196					
14-Feb-03	0.02	0.904		0.904						0.142					

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

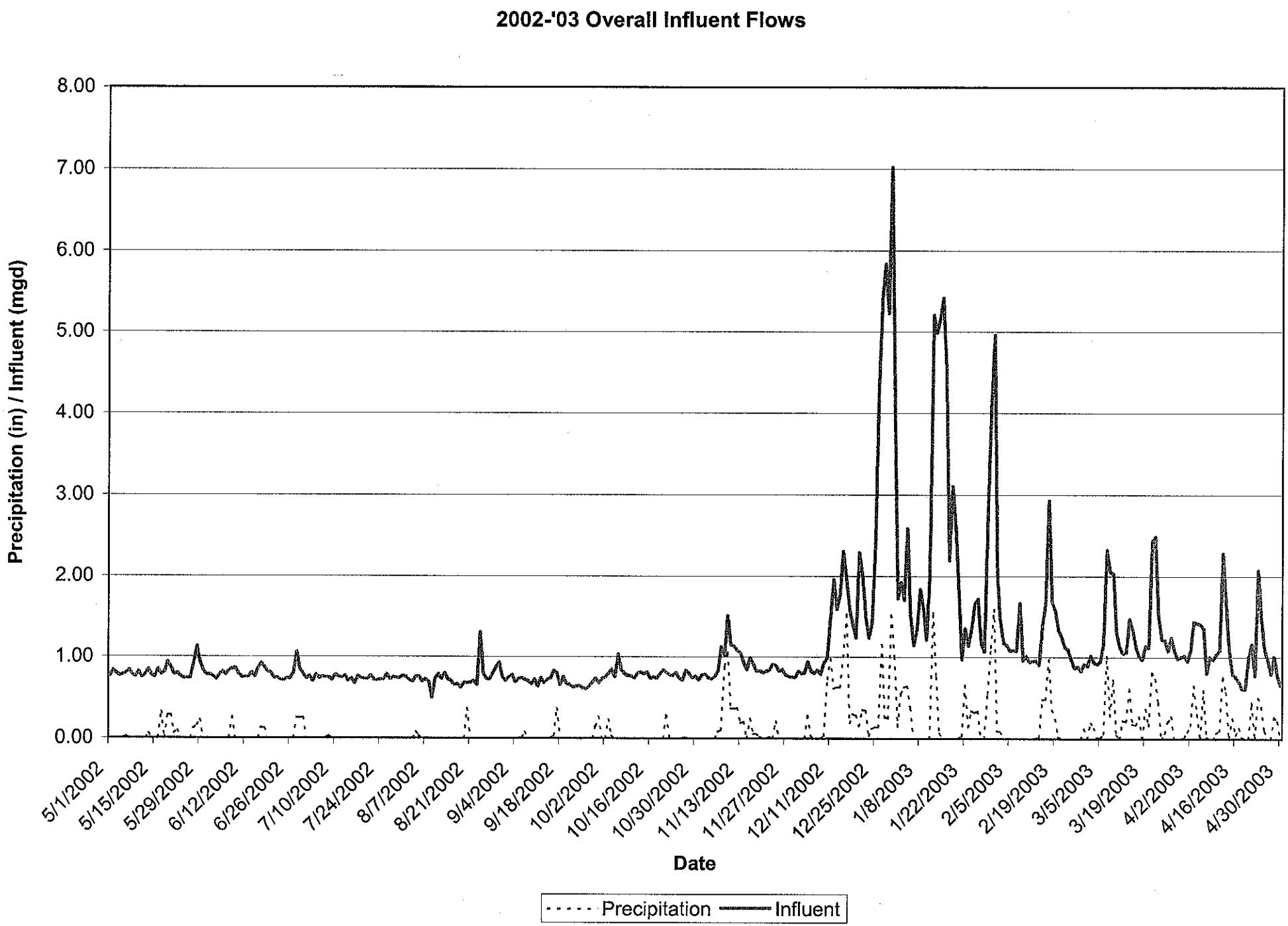
Summary of Daily WWTF Influent and Precipitation
May 2003 through April 2004

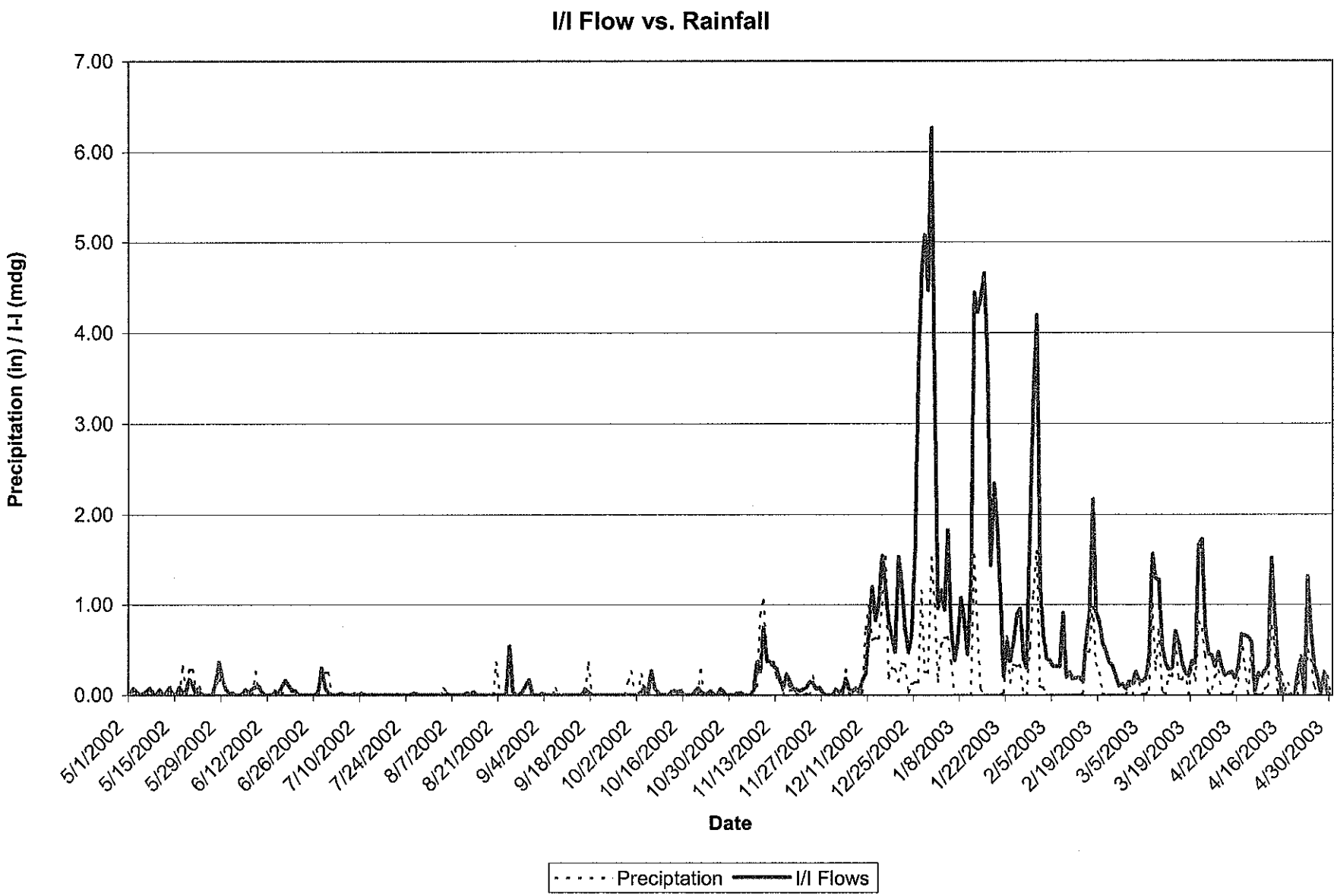
DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
15-Feb-03	0.48	1.386		1.386						0.624					
16-Feb-03	0.48	1.647		1.647						0.885					
17-Feb-03	0.97	2.929		2.929						2.167					
18-Feb-03	0.35	1.691		1.691						0.929					
19-Feb-03	0.24	1.575		1.575						0.813					
20-Feb-03	0.02	1.333		1.333						0.571					
21-Feb-03	0.00	1.254		1.254						0.492					
22-Feb-03	0.00	1.124		1.124						0.362					
23-Feb-03	0.00	1.093		1.093						0.331					
24-Feb-03	0.00	0.974		0.974						0.212					
25-Feb-03	0.00	0.863		0.863						0.101					
26-Feb-03	0.00	0.882		0.882						0.120					
27-Feb-03	0.00	0.828		0.828						0.066					
28-Feb-03	0.12	0.911		0.911						0.149				0.132	0.112
1-Mar-03	0.00	0.887		0.887			2.86	35.78	1.23	0.125					
2-Mar-03	0.19	1.019		1.019						0.257					
3-Mar-03	0.13	0.934		0.934						0.172					
4-Mar-03	0.01	0.915		0.915						0.153					
5-Mar-03	0.01	0.945		0.945						0.183					
6-Mar-03	0.06	1.171		1.171						0.409					
7-Mar-03	1.01	2.326		2.326						1.564					
8-Mar-03	0.28	2.051		2.051						1.289					
9-Mar-03	0.72	2.032		2.032						1.270					
10-Mar-03	0.04	1.310		1.310						0.548					
11-Mar-03	0.00	1.129		1.129						0.367					
12-Mar-03	0.22	1.048		1.048						0.286					
13-Mar-03	0.21	1.058		1.058						0.296					
14-Mar-03	0.61	1.471		1.471						0.709					
15-Mar-03	0.18	1.344		1.344						0.582					
16-Mar-03	0.17	1.132		1.132						0.370					
17-Mar-03	0.27	1.013		1.013						0.251					
18-Mar-03	0.00	0.970		0.970						0.208					
19-Mar-03	0.36	1.139		1.139						0.377					
20-Mar-03	0.16	1.114		1.114						0.352					
21-Mar-03	0.81	2.430		2.430						1.668					
22-Mar-03	0.73	2.491		2.491						1.729					
23-Mar-03	0.44	1.523		1.523						0.761					
24-Mar-03	0.00	1.217		1.217						0.455					
25-Mar-03	0.07	1.206		1.206						0.444					
26-Mar-03	0.21	1.075		1.075						0.313					
27-Mar-03	0.27	1.242		1.242						0.480					
28-Mar-03	0.00	1.081		1.081						0.319					
29-Mar-03	0.00	0.976		0.976						0.214					
30-Mar-03	0.00	1.002		1.002						0.240					
31-Mar-03	0.02	1.022		1.022						0.260					
1-Apr-03	0.09	0.951		0.951		N/A	7.27	40.34	1.30	0.189	2.1			0.099	0.080
2-Apr-03	0.16	1.081		1.081		N/A				0.319	2.0	2.0			
3-Apr-03	0.65	1.435		1.435		N/A				0.673	1.0	1.2	1.3		
4-Apr-03	0.30	1.420		1.420		N/A				0.658	2.2	1.4	1.5		
5-Apr-03	0.00	1.406		1.406		1.406				0.644					
6-Apr-03	0.59	1.357		1.357		N/A				0.595	1.0				
7-Apr-03	0.02	0.803		0.803		N/A				0.041	2.1	1.0			
8-Apr-03	0.00	1.003		1.003		1.003				0.241					
9-Apr-03	0.00	0.969		0.969		0.969				0.207					
10-Apr-03	0.07	1.036		1.036		N/A				0.274	3.9				
11-Apr-03	0.10	1.082		1.082		N/A				0.320	3.2	3.5			
12-Apr-03	0.76	2.282		2.282		N/A				1.520	2.0	2.1	2.3		
13-Apr-03	0.57	1.671		1.671		N/A				0.909	1.6	1.8	1.9		

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

Summary of Daily WWTF Influent and Precipitation
May 2003 through April 2004

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
14-Apr-03	0.01	1.100		1.100		N/A				0.338	33.8	2.2	2.1		
15-Apr-03	0.25	0.795		0.795		N/A				0.033	0.1	1.4	1.5		
16-Apr-03	0.05	0.757		0.757		N/A				0.000	0.0	0.1	1.2		
17-Apr-03	0.13	0.702		0.702		N/A				0.000	0.0	0.0	0.1		
18-Apr-03	0.02	0.612		0.612		N/A				0.000	0.0	0.0	0.0		
19-Apr-03	0.00	0.608		0.608		0.608				0.000					
20-Apr-03	0.00	0.995		0.995		0.995				0.233					
21-Apr-03	0.44	1.161		1.161		N/A				0.399	0.9				
22-Apr-03	0.00	0.770		0.770		0.770				0.008					
23-Apr-03	0.50	2.075		2.075		N/A				1.313	2.6				
24-Apr-03	0.39	1.487		1.487		N/A				0.725	1.9	2.3			
25-Apr-03	0.09	1.099		1.099		N/A				0.337	3.7	2.2	2.4		
26-Apr-03	0.00	0.963		0.963		0.963				0.201					
27-Apr-03	0.00	0.792		0.792		0.792				0.030					
28-Apr-03	0.26	1.005		1.005		N/A				0.243	0.9				
29-Apr-03	0.21	0.776		0.776		N/A				0.014					
30-Apr-03	0.01	0.653		0.653		N/A	5.58	31.90	1.06	0.000				0.124	0.103
Total	**47.14**	**417.46**	**140.17**	**183.84**	**69.75**	**23.92**	47.14	417.46	**n/a**	**145.144**					
Mean	**0.13**	**1.14**	**0.76**	**1.53**	**0.76**	**0.82**	**n/a**	**n/a**	1.14	**0.40**				**0.125**	**0.108**
Maximum	**1.59**	**7.02**	**1.30**	**5.42**	**1.30**	**1.41**	**12.66**	**75.82**	**2.45**	**6.26**				**0.197**	**0.214**
										Total April and May I/I (mgd/in)	**74.8**	**25.9**	**16.6**		
										Avg. WW I/I (mgd/in)	**2.5**	**1.4**	**1.3**		


2002-'03 Overall Influent Flows
Precipitation (in) / Influent (mgd)
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
5/1/2002
5/15/2002
5/29/2002
6/12/2002
6/26/2002
7/10/2002
7/24/2002
8/7/2002
8/21/2002
9/4/2002
9/18/2002
10/2/2002
10/16/2002
10/30/2002
11/13/2002
11/27/2002
12/11/2002
12/25/2002
1/8/2003
1/22/2003
2/5/2003
2/19/2003
3/5/2003
3/19/2003
4/2/2003
4/16/2003
4/30/2003
Date
Precipitation
Influent


I/I Flow vs. Rainfall
Precipitation (in) / I-I (mdg)
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
5/1/2002
5/15/2002
5/29/2002
6/12/2002
6/26/2002
7/10/2002
7/24/2002
8/7/2002
8/21/2002
9/4/2002
9/18/2002
10/2/2002
10/16/2002
10/30/2002
11/13/2002
11/27/2002
12/11/2002
12/25/2002
1/8/2003
1/22/2003
2/5/2003
2/19/2003
3/5/2003
3/19/2003
4/2/2003
4/16/2003
4/30/2003
Date
Preciptation
I/I Flows

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028
Summary of WWTF Influent, Effluent and Performance
May 2001 through April 2002

2001 Population (Est)	**6400**
2002 Population (Est)	**6580**
Average (Est) =	***6490***

OVERALL YEAR FLOW AND LOADS

Parameter	Units	Year Value	Per Capita (gpcpd)
Average Daily Infiltration	mgd	0.2	
Average Daily Exfiltration	mgd	0.0	
BOD5 Loading	lbs/day	432	
Avg. Daily Domesitc Flow (ADF)	mgd	0.41	63
Max Monthly Dry Weather Flow (MMDWF)	mgd	0.45	69
Max Monthly Wet Weather Flow (MMWWF)	mgd	1.64	253
Peak Wet Weather Hydraulic Flow (WWPIF)	mgd	15.80	2435

		Data May '03 - Ap' 04 Flows (mgd)	(gpcpd)	Comments
Avg. Dry Weather Daily Q (May - Oct)	**ADWF**	0.41	63	Average Dry Weather Flow
Peak Dry Weather Q (May - Oct)	**PDWF**	1.14	176	Peak Dry Weather Flow
Avg. Daily Wet Weather Q (Jan - April)	**AWWF**	1.21	186	Average Daily Q during the Winter Months
Peak Wet Weather Q (Jan - April)	**PWWF**	4.02	619	Peak Wet Weather Flow
Average Daily Q (May-Ap)	**AADF**	0.80	123	Average Annual Daily Flow
Peak Daily Annual Q (May - Ap)	**PDAF**	4.02	619	Maximum Day Q during the Year - **NOT** 5-yr PDAF
Peak Daily I/I Flow (May - Ap)		3.61		Peak Daily Flow after ADWF is Subtracted
Max. Mo. Dry Weather Q (May-Oct)	**MMDWF**	0.45	69	MMDWF invariably occurs in May
Max. Mo. Wet Weather Q (Nov - Ap)	**MMWWF**	1.64	253	MMWWF invariably occurs in January
Peak Instantaneous Flow	**PIF**	15.80	2435	*10973 gpm* (ADWF *3.0) + Ap/May I/I Correlation *5-Yr 24 Hr Storm + Avg Daily Infiltration
Avg. BOD5 Loading Per Day (lbs/day)		432		
Avg. TSS Loading Per Day (lbs/day)		492		
Diurnal Peaking Factor		3.0	n/a	
5-YR 24 HR DESIGN STORM (in)		3.5	n/a	NOAA Atlas 2, Volume X, Figure 26
Avg. Daily Infiltration (mdg)		0.2	n/a	ADF during High Groundwater (Ap/May) minus ADF no Rain (June-Aug)
Exist. Yearly I/I CORR. (mgd/in rainfall)		2.69	n/a	Sum of Yearly Daily Influent - Daily ADWF / Total Year Rainfall
Exist. May and April I/I CORR. (mgd/in rainfall)		4.12	n/a	Avg. (Sum of April and May Daily Influent - Daily ADWF / April and May Rainfall)

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
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Summary of Daily WWTF Influent and Precipitation
May 2002 through April 2003

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
1-May-01	0.09	0.495	0.495			N/A				0.087	1.0				
2-May-01	0.00	0.410	0.410			0.410				0.002					
3-May-01	0.00	0.401	0.401			0.401				0.000					
4-May-01	0.00	0.373	0.373			0.373				0.000					
5-May-01	0.00	0.386	0.386			0.386				0.000					
6-May-01	0.00	0.405	0.405			0.405				0.000					
7-May-01	0.00	0.441	0.441			0.441				0.033					
8-May-01	0.00	0.385	0.385			0.385				0.000					
9-May-01	0.00	0.412	0.412			0.412				0.004					
10-May-01	0.00	0.380	0.380			0.380				0.000					
11-May-01	0.00	0.349	0.349			0.349				0.000					
12-May-01	0.00	0.360	0.360			0.360				0.000					
13-May-01	0.00	0.391	0.391			0.391				0.000					
14-May-01	1.14	1.020	1.020			N/A				0.612	0.5				
15-May-01	0.26	0.609	0.609			N/A				0.201	0.8	0.6			
16-May-01	0.21	0.490	0.490			N/A				0.082	0.4	0.6	0.6		
17-May-01	0.00	0.442	0.442			0.442				0.034					
18-May-01	0.00	0.395	0.395			0.395				0.000					
19-May-01	0.00	0.398	0.398			0.398				0.000					
20-May-01	0.00	0.418	0.418			0.418				0.010					
21-May-01	0.00	0.385	0.385			0.385				0.000					
22-May-01	0.00	0.382	0.382			0.382				0.000					
23-May-01	0.00	0.385	0.385			0.385				0.000					
24-May-01	0.00	0.388	0.388			0.388				0.000					
25-May-01	0.00	0.367	0.367			0.367				0.000					
26-May-01	0.00	0.355	0.355			0.355				0.000					
27-May-01	0.00	0.366	0.366			0.366				0.000					
28-May-01	0.03	0.410	0.410			N/A				0.002	0.1				
29-May-01	0.00	0.375	0.375			0.375				0.000					
30-May-01	0.00	0.363	0.363			0.363				0.000					
31-May-01	0.00	0.369	0.369			0.369	1.73	13.11	0.42	0.000				0.069	0.094
1-Jun-01	0.01	0.358	0.358		0.358					0.000					
2-Jun-01	0.00	0.388	0.388		0.388					0.000					
3-Jun-01	0.00	0.412	0.412		0.412					0.004					
4-Jun-01	0.15	0.382	0.382		0.382					0.000					
5-Jun-01	0.21	0.449	0.449		0.449					0.041					
6-Jun-01	0.00	0.373	0.373		0.373					0.000					
7-Jun-01	0.00	0.366	0.366		0.366					0.000					
8-Jun-01	0.00	0.356	0.356		0.356					0.000					
9-Jun-01	0.00	0.377	0.377		0.377					0.000					
10-Jun-01	0.00	0.386	0.386		0.386					0.000					
11-Jun-01	0.04	0.515	0.515		0.515					0.107					
12-Jun-01	0.19	0.422	0.422		0.422					0.014					
13-Jun-01	0.00	0.384	0.384		0.384					0.000					
14-Jun-01	0.00	0.381	0.381		0.381					0.000					
15-Jun-01	0.00	0.366	0.366		0.366					0.000					
16-Jun-01	0.00	0.374	0.374		0.374					0.000					
17-Jun-01	0.00	0.391	0.391		0.391					0.000					
18-Jun-01	0.00	0.366	0.366		0.366					0.000					
19-Jun-01	0.00	0.360	0.360		0.360					0.000					
20-Jun-01	0.00	0.355	0.355		0.355					0.000					
21-Jun-01	0.00	0.378	0.378		0.378					0.000					
22-Jun-01	0.00	0.352	0.352		0.352					0.000					
23-Jun-01	0.00	0.356	0.356		0.356					0.000					
24-Jun-01	0.12	0.443	0.443		0.443					0.035					
25-Jun-01	0.02	0.323	0.323		0.323					0.000					
26-Jun-01	0.03	0.649	0.649		0.649					0.241					
27-Jun-01	1.53	0.815	0.815		0.815					0.407					

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

Summary of Daily WWTF Influent and Precipitation
May 2002 through April 2003

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
28-Jun-01	0.01	0.452	0.452		0.452					0.044					
29-Jun-01	0.00	0.406	0.406		0.406					0.000					
30-Jun-01	0.00	0.404	0.404		0.404		2.31	12.34	0.41	0.000				0.093	0.098
1-Jul-01	0.00	0.411	0.411		0.411					0.003					
2-Jul-01	0.00	0.391	0.391		0.391					0.000					
3-Jul-01	0.00	0.396	0.396		0.396					0.000					
4-Jul-01	0.00	0.412	0.412		0.412					0.004					
5-Jul-01	0.00	0.382	0.382		0.382					0.000					
6-Jul-01	0.00	0.384	0.384		0.384					0.000					
7-Jul-01	0.00	0.373	0.373		0.373					0.000					
8-Jul-01	0.00	0.407	0.407		0.407					0.000					
9-Jul-01	0.00	0.394	0.394		0.394					0.000					
10-Jul-01	0.00	0.373	0.373		0.373					0.000					
11-Jul-01	0.00	0.373	0.373		0.373					0.000					
12-Jul-01	0.00	0.374	0.374		0.374					0.000					
13-Jul-01	0.00	0.385	0.385		0.385					0.000					
14-Jul-01	0.00	0.397	0.397		0.397					0.000					
15-Jul-01	0.00	0.396	0.396		0.396					0.000					
16-Jul-01	0.00	0.371	0.371		0.371					0.000					
17-Jul-01	0.00	0.372	0.372		0.372					0.000					
18-Jul-01	0.00	0.357	0.357		0.357					0.000					
19-Jul-01	0.00	0.359	0.359		0.359					0.000					
20-Jul-01	0.00	0.354	0.354		0.354					0.000					
21-Jul-01	0.00	0.359	0.359		0.359					0.000					
22-Jul-01	0.00	0.383	0.383		0.383					0.000					
23-Jul-01	0.00	0.364	0.364		0.364					0.000					
24-Jul-01	0.00	0.372	0.372		0.372					0.000					
25-Jul-01	0.00	0.355	0.355		0.355					0.000					
26-Jul-01	0.00	0.367	0.367		0.367					0.000					
27-Jul-01	0.00	0.356	0.356		0.356					0.000					
28-Jul-01	0.00	0.358	0.358		0.358					0.000					
29-Jul-01	0.07	0.407	0.407		0.407					0.000					
30-Jul-01	0.20	0.373	0.373		0.373					0.000					
31-Jul-01	0.00	0.364	0.364		0.364		0.27	11.72	0.38	0.000				0.063	0.051
1-Aug-01	0.00	0.362	0.362		0.362					0.000					
2-Aug-01	0.00	0.373	0.373		0.373					0.000					
3-Aug-01	0.00	0.386	0.386		0.386					0.000					
4-Aug-01	0.00	0.369	0.369		0.369					0.000					
5-Aug-01	0.00	0.390	0.390		0.390					0.000					
6-Aug-01	0.00	0.365	0.365		0.365					0.000					
7-Aug-01	0.00	0.389	0.389		0.389					0.000					
8-Aug-01	0.00	0.388	0.388		0.388					0.000					
9-Aug-01	0.00	0.382	0.382		0.382					0.000					
10-Aug-01	0.00	0.364	0.364		0.364					0.000					
11-Aug-01	0.00	0.366	0.366		0.366					0.000					
12-Aug-01	0.00	0.384	0.384		0.384					0.000					
13-Aug-01	0.00	0.424	0.424		0.424					0.016					
14-Aug-01	0.00	0.365	0.365		0.365					0.000					
15-Aug-01	0.00	0.357	0.357		0.357					0.000					
16-Aug-01	0.00	0.357	0.357		0.357					0.000					
17-Aug-01	0.00	0.366	0.366		0.366					0.000					
18-Aug-01	0.00	0.361	0.361		0.361					0.000					
19-Aug-01	0.00	0.364	0.364		0.364					0.000					
20-Aug-01	0.00	0.367	0.367		0.367					0.000					
21-Aug-01	0.00	0.414	0.414		0.414					0.006					
22-Aug-01	0.70	0.992	0.992		0.992					0.584					
23-Aug-01	0.32	0.495	0.495		0.495					0.087					
24-Aug-01	0.00	0.451	0.451		0.451					0.043					

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Summary of Daily WWTF Influent and Precipitation
May 2002 through April 2003

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25-Aug-01	0.00	0.396	0.396		0.396					0.000					
26-Aug-01	0.00	0.381	0.381		0.381					0.000					
27-Aug-01	0.00	0.375	0.375		0.375					0.000					
28-Aug-01	0.00	0.382	0.382		0.382					0.000					
29-Aug-01	0.00	0.385	0.385		0.385					0.000					
30-Aug-01	0.00	0.370	0.370		0.370					0.000					
31-Aug-01	0.00	0.377	0.377		0.377		1.02	12.50	0.40	0.000				0.043	0.043
1-Sep-01	0.00	0.362	0.362							0.000					
2-Sep-01	0.00	0.351	0.351							0.000					
3-Sep-01	0.00	0.406	0.406							0.000					
4-Sep-01	0.00	0.391	0.391							0.000					
5-Sep-01	0.00	0.376	0.376							0.000					
6-Sep-01	0.00	0.383	0.383							0.000					
7-Sep-01	0.00	0.355	0.355							0.000					
8-Sep-01	0.00	0.371	0.371							0.000					
9-Sep-01	0.00	0.404	0.404							0.000					
10-Sep-01	0.00	0.377	0.377							0.000					
11-Sep-01	0.00	0.362	0.362							0.000					
12-Sep-01	0.00	0.376	0.376							0.000					
13-Sep-01	0.00	0.361	0.361							0.000					
14-Sep-01	0.00	0.363	0.363							0.000					
15-Sep-01	0.10	0.379	0.379							0.000					
16-Sep-01	0.00	0.389	0.389							0.000					
17-Sep-01	0.00	0.395	0.395							0.000					
18-Sep-01	0.00	0.381	0.381							0.000					
19-Sep-01	0.00	0.378	0.378							0.000					
20-Sep-01	0.00	0.373	0.373							0.000					
21-Sep-01	0.00	0.362	0.362							0.000					
22-Sep-01	0.00	0.374	0.374							0.000					
23-Sep-01	0.00	0.396	0.396							0.000					
24-Sep-01	0.00	0.413	0.413							0.005					
25-Sep-01	0.17	0.539	0.539							0.131					
26-Sep-01	0.18	0.472	0.472							0.064					
27-Sep-01	0.00	0.392	0.392							0.000					
28-Sep-01	0.00	0.354	0.354							0.000					
29-Sep-01	0.00	0.364	0.364							0.000					
30-Sep-01	0.00	0.394	0.394				0.45	11.59	0.39	0.000				0.067	0.038
1-Oct-01	0.00	0.367	0.367							0.000					
2-Oct-01	0.00	0.372	0.372							0.000					
3-Oct-01	0.00	0.379	0.379							0.000					
4-Oct-01	0.00	0.366	0.366							0.000					
5-Oct-01	0.00	0.352	0.352							0.000					
6-Oct-01	0.00	0.374	0.374							0.000					
7-Oct-01	0.00	0.397	0.397							0.000					
8-Oct-01	0.00	0.376	0.376							0.000					
9-Oct-01	0.00	0.329	0.329							0.000					
10-Oct-01	0.23	0.444	0.444							0.036					
11-Oct-01	0.03	0.377	0.377							0.000					
12-Oct-01	0.00	0.380	0.380							0.000					
13-Oct-01	0.00	0.381	0.381							0.000					
14-Oct-01	0.00	0.406	0.406							0.000					
15-Oct-01	0.00	0.368	0.368							0.000					
16-Oct-01	0.00	0.373	0.373							0.000					
17-Oct-01	0.00	0.364	0.364							0.000					
18-Oct-01	0.00	0.360	0.360							0.000					
19-Oct-01	0.00	0.368	0.368							0.000					
20-Oct-01	0.00	0.389	0.389							0.000					
21-Oct-01	0.07	0.414	0.414							0.006					

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22-Oct-01	0.30	0.590	0.590							0.182					
23-Oct-01	0.21	0.474	0.474							0.066					
24-Oct-01	0.00	0.413	0.413							0.005					
25-Oct-01	0.00	0.381	0.381							0.000					
26-Oct-01	0.00	0.385	0.385							0.000					
27-Oct-01	0.35	0.590	0.590							0.182					
28-Oct-01	0.00	0.457	0.457							0.049					
29-Oct-01	0.11	0.697	0.697							0.289					
30-Oct-01	0.94	1.139	1.139							0.731					
31-Oct-01	0.36	0.748	0.748				2.60	13.81	0.45	0.340				0.085	0.075
1-Nov-01	0.17	0.644								0.236					
2-Nov-01	0.02	0.465								0.057					
3-Nov-01	0.00	0.449								0.041					
4-Nov-01	0.00	0.524								0.116					
5-Nov-01	0.08	0.464								0.056					
6-Nov-01	0.00	0.430								0.022					
7-Nov-01	0.00	0.408								0.000					
8-Nov-01	0.00	0.392								0.000					
9-Nov-01	0.00	0.416								0.008					
10-Nov-01	0.00	0.401								0.000					
11-Nov-01	0.02	0.438								0.030					
12-Nov-01	0.13	0.577								0.169					
13-Nov-01	0.64	0.633								0.225					
14-Nov-01	1.74	0.646								0.238					
15-Nov-01	0.19	0.684								0.276					
16-Nov-01	0.08	0.668								0.260					
17-Nov-01	0.00	0.565								0.157					
18-Nov-01	0.00	0.587								0.179					
19-Nov-01	0.73	0.874								0.466					
20-Nov-01	0.35	0.749								0.341					
21-Nov-01	0.63	1.688								1.280					
22-Nov-01	2.01	2.024								1.616					
23-Nov-01	0.14	1.056								0.648					
24-Nov-01	0.28	1.365								0.957					
25-Nov-01	0.27	1.101								0.693					
26-Nov-01	0.27	0.904								0.496					
27-Nov-01	0.00	1.019								0.611					
28-Nov-01	2.02	3.763								3.355					
29-Nov-01	0.33	1.613								1.205					
30-Nov-01	1.01	2.528					11.11	28.08	0.94	2.120				0.061	0.097
1-Dec-01	0.85	2.885								2.477					
2-Dec-01	0.85	1.948								1.540					
3-Dec-01	0.14	1.736								1.328					
4-Dec-01	0.84	2.616								2.208					
5-Dec-01	0.86	1.980								1.572					
6-Dec-01	0.30	1.615								1.207					
7-Dec-01	0.02	1.398								0.990					
8-Dec-01	0.00	1.047								0.639					
9-Dec-01	0.29	0.957								0.549					
10-Dec-01	0.00	0.942								0.534					
11-Dec-01	0.10	0.904								0.496					
12-Dec-01	0.14	1.077								0.669					
13-Dec-01	1.36	3.319								2.911					
14-Dec-01	0.56	1.795								1.387					
15-Dec-01	0.36	1.204								0.796					
16-Dec-01	0.80	2.769								2.361					
17-Dec-01	0.81	1.568								1.160					
18-Dec-01	0.36	1.365								0.957					

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19-Dec-01	0.10	1.299								0.891					
20-Dec-01	0.24	1.201								0.793					
21-Dec-01	0.01	1.042								0.634					
22-Dec-01	0.02	0.988								0.580					
23-Dec-01	0.01	0.902								0.494					
24-Dec-01	0.00	0.903								0.495					
25-Dec-01	0.00	0.841								0.433					
26-Dec-01	0.00	0.839								0.431					
27-Dec-01	0.12	1.016								0.608					
28-Dec-01	0.39	0.966								0.558					
29-Dec-01	0.05	0.952								0.544					
30-Dec-01	0.00	1.035								0.627					
31-Dec-01	0.29	1.071					9.87	44.18	1.43	0.663				0.097	0.134
1-Jan-02	0.37	1.485		1.485						1.077					
2-Jan-02	0.36	1.164		1.164						0.756					
3-Jan-02	0.15	1.213		1.213						0.805					
4-Jan-02	0.01	1.039		1.039						0.631					
5-Jan-02	0.00	1.931		1.931						1.523					
6-Jan-02	1.66	3.322		3.322						2.914					
7-Jan-02	1.53	3.223		3.223						2.815					
8-Jan-02	0.59	1.997		1.997						1.589					
9-Jan-02	0.01	1.321		1.321						0.913					
10-Jan-02	0.00	1.147		1.147						0.739					
11-Jan-02	0.01	1.075		1.075						0.667					
12-Jan-02	0.00	1.016		1.016						0.608					
13-Jan-02	0.10	0.980		0.980						0.572					
14-Jan-02	0.09	0.926		0.926						0.518					
15-Jan-02	0.01	0.883		0.883						0.475					
16-Jan-02	0.01	0.896		0.896						0.488					
17-Jan-02	0.06	0.913		0.913						0.505					
18-Jan-02	0.03	0.971		0.971						0.563					
19-Jan-02	0.23	1.087		1.087						0.679					
20-Jan-02	0.58	1.913		1.913						1.505					
21-Jan-02	0.59	2.061		2.061						1.653					
22-Jan-02	0.87	1.761		1.761						1.353					
23-Jan-02	0.13	1.243		1.243						0.835					
24-Jan-02	0.20	2.504		2.504						2.096					
25-Jan-02	1.80	4.018		4.018						3.610					
26-Jan-02	0.00	2.005		2.005						1.597					
27-Jan-02	0.96	2.436		2.436						2.028					
28-Jan-02	0.00	2.026		2.026						1.618					
29-Jan-02	0.00	1.492		1.492						1.084					
30-Jan-02	0.02	1.336		1.336						0.928					
31-Jan-02	0.27	1.490		1.490			10.64	50.87	1.64	1.082				0.060	0.076
1-Feb-02	0.16	1.299		1.299						0.891					
2-Feb-02	0.00	1.149		1.149						0.741					
3-Feb-02	0.27	1.123		1.123						0.715					
4-Feb-02	0.00	1.029		1.029						0.621					
5-Feb-02	0.33	1.078		1.078						0.670					
6-Feb-02	0.14	1.106		1.106						0.698					
7-Feb-02	1.11	3.034		3.034						2.626					
8-Feb-02	0.46	1.814		1.814						1.406					
9-Feb-02	0.04	1.304		1.304						0.896					
10-Feb-02	0.00	1.159		1.159						0.751					
11-Feb-02	0.00	1.109		1.109						0.701					
12-Feb-02	0.00	1.016		1.016						0.608					
13-Feb-02	0.00	0.951		0.951						0.543					
14-Feb-02	0.00	0.931		0.931						0.523					

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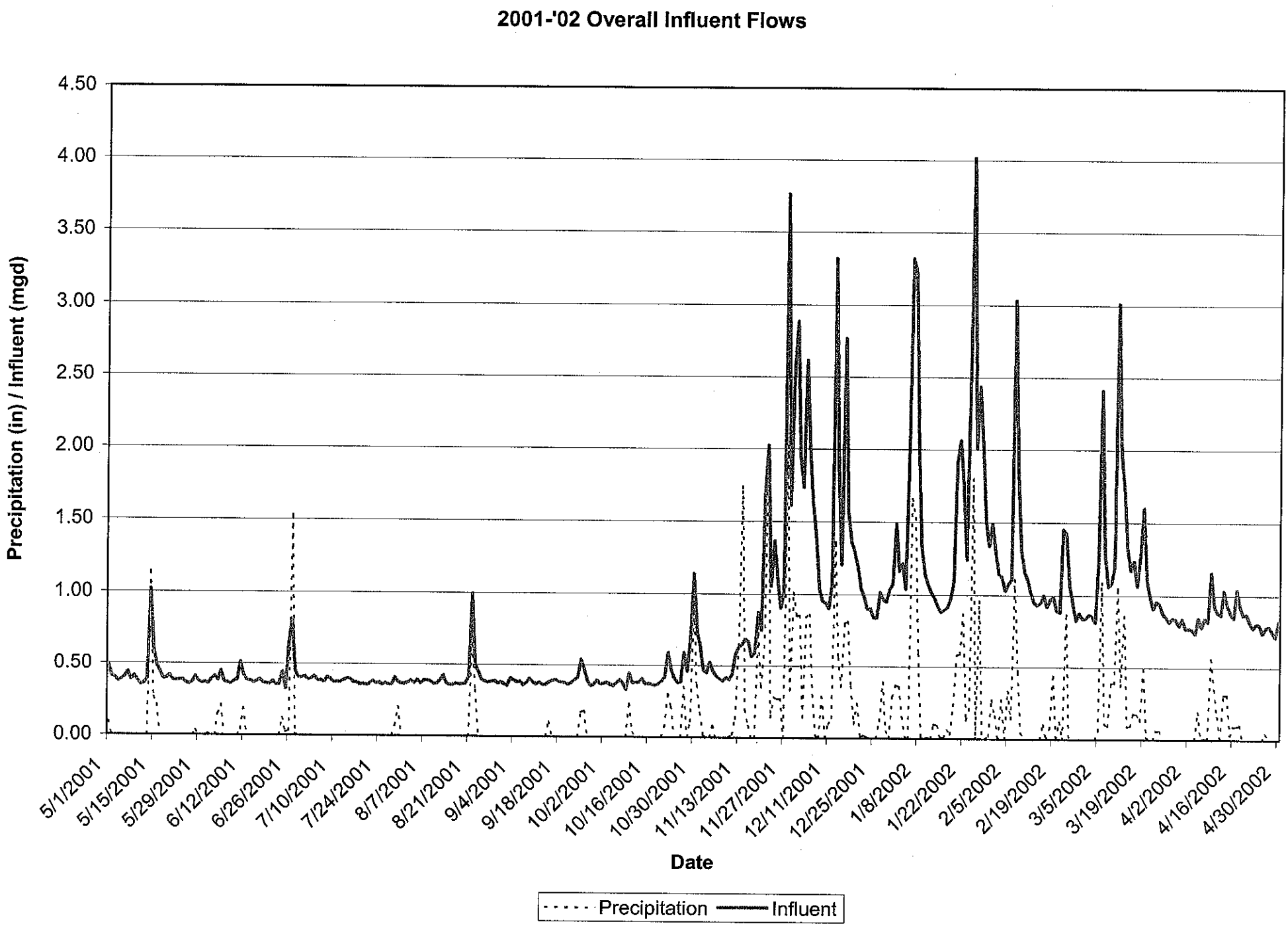
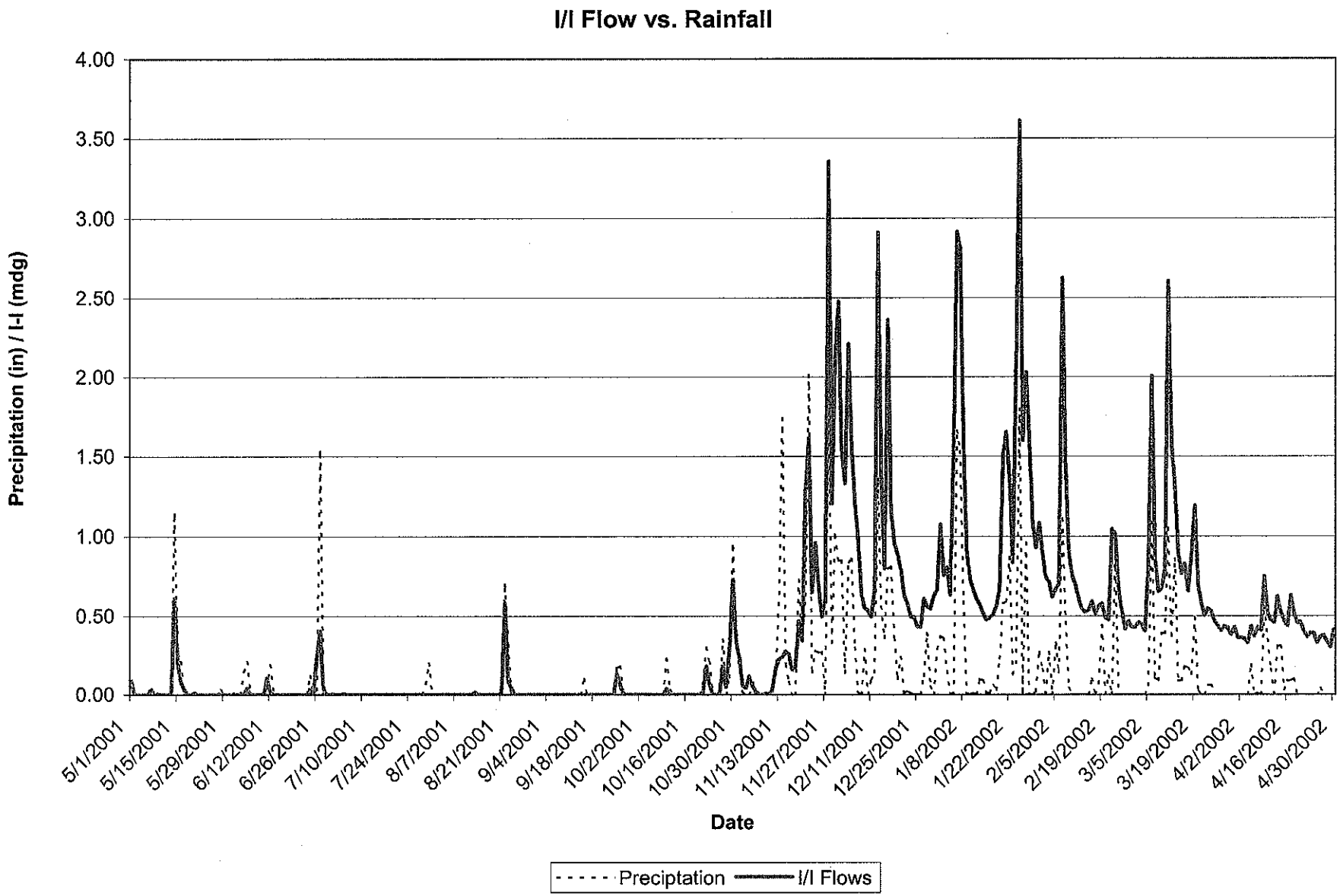
15-Feb-02	0.00	0.947		0.947						0.539					
16-Feb-02	0.10	0.999		0.999						0.591					
17-Feb-02	0.00	0.921		0.921						0.513					
18-Feb-02	0.07	0.968		0.968						0.560					
19-Feb-02	0.44	0.989		0.989						0.581					
20-Feb-02	0.00	0.894		0.894						0.486					
21-Feb-02	0.12	0.880		0.880						0.472					
22-Feb-02	0.00	1.453		1.453						1.045					
23-Feb-02	0.87	1.424		1.424						1.016					
24-Feb-02	0.00	1.078		1.078						0.670					
25-Feb-02	0.00	0.943		0.943						0.535					
26-Feb-02	0.00	0.825		0.825						0.417					
27-Feb-02	0.00	0.877		0.877						0.469					
28-Feb-02	0.00	0.837		0.837						0.429				0.072	0.091
1-Mar-02	0.00	0.837		0.837			4.11	32.97	1.14	0.429					
2-Mar-02	0.00	0.866		0.866						0.458					
3-Mar-02	0.00	0.854		0.854						0.446					
4-Mar-02	0.00	0.810		0.810						0.402					
5-Mar-02	0.06	1.231		1.231						0.823					
6-Mar-02	1.09	2.411		2.411						2.003					
7-Mar-02	0.11	1.283		1.283						0.875					
8-Mar-02	0.09	1.061		1.061						0.653					
9-Mar-02	0.39	1.083		1.083						0.675					
10-Mar-02	0.39	1.201		1.201						0.793					
11-Mar-02	1.05	3.011		3.011						2.603					
12-Mar-02	0.37	1.987		1.987						1.579					
13-Mar-02	0.86	1.711		1.711						1.303					
14-Mar-02	0.09	1.312		1.312						0.904					
15-Mar-02	0.09	1.174		1.174						0.766					
16-Mar-02	0.18	1.236		1.236						0.828					
17-Mar-02	0.17	1.066		1.066						0.658					
18-Mar-02	0.13	1.281		1.281						0.873					
19-Mar-02	0.49	1.600		1.600						1.192					
20-Mar-02	0.02	1.105		1.105						0.697					
21-Mar-02	0.00	0.991		0.991						0.583					
22-Mar-02	0.00	0.910		0.910						0.502					
23-Mar-02	0.06	0.957		0.957						0.549					
24-Mar-02	0.06	0.938		0.938						0.530					
25-Mar-02	0.00	0.872		0.872						0.464					
26-Mar-02	0.00	0.849		0.849						0.441					
27-Mar-02	0.00	0.815		0.815						0.407					
28-Mar-02	0.00	0.843		0.843						0.435					
29-Mar-02	0.00	0.831		0.831						0.423					
30-Mar-02	0.00	0.789		0.789						0.381					
31-Mar-02	0.00	0.837		0.837						0.429					
1-Apr-02	0.00	0.771		0.771		0.771	5.70	36.69	1.18	0.363				0.050	0.064
2-Apr-02	0.00	0.770		0.770		0.770				0.362					
3-Apr-02	0.00	0.764		0.764		0.764				0.356					
4-Apr-02	0.00	0.736		0.736		0.736				0.328					
5-Apr-02	0.19	0.844		0.844		N/A				0.436	2.3				
6-Apr-02	0.00	0.779		0.779		0.779				0.371					
7-Apr-02	0.01	0.837		0.837		N/A				0.429	42.9				
8-Apr-02	0.00	0.815		0.815		0.815				0.407					
9-Apr-02	0.56	1.158		1.158		N/A				0.750	1.3				
10-Apr-02	0.35	0.926		0.926		N/A				0.518	1.5	1.4			
11-Apr-02	0.16	0.881		0.881		N/A				0.473	3.0	1.9	1.6		
12-Apr-02	0.00	0.866		0.866		0.866				0.458			2.8		
13-Apr-02	0.31	1.033		1.033		N/A				0.625	2.0		3.3		

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

Summary of Daily WWTF Influent and Precipitation
May 2002 through April 2003

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL. (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
14-Apr-02	0.31	0.939		0.939		N/A				0.531	1.7	1.9	2.6		
15-Apr-02	0.03	0.877		0.877		N/A				0.469	15.6	2.9	2.5		
16-Apr-02	0.09	0.845		0.845		N/A				0.437	4.9	7.6	3.3		
17-Apr-02	0.09	1.039		1.039		N/A				0.631	7.0	5.9	7.3		
18-Apr-02	0.10	0.929		0.929		N/A				0.521	5.2	6.1	5.7		
19-Apr-02	0.00	0.864		0.864		0.864				0.456					
20-Apr-02	0.00	0.872		0.872		0.872				0.464					
21-Apr-02	0.00	0.813		0.813		0.813				0.405					
22-Apr-02	0.00	0.775		0.775		0.775				0.367					
23-Apr-02	0.00	0.802		0.802		0.802				0.394					
24-Apr-02	0.00	0.798		0.798		0.798				0.390					
25-Apr-02	0.00	0.739		0.739		0.739				0.331					
26-Apr-02	0.04	0.776		0.776		N/A				0.368	9.2				
27-Apr-02	0.00	0.786		0.786		0.786				0.378					
28-Apr-02	0.00	0.748		0.748		0.748				0.340					
29-Apr-02	0.00	0.710		0.710		0.710				0.302					
30-Apr-02	0.00	0.822		0.822		0.822	2.24	24.54	0.82	0.414				0.048	0.048
Total	**52.05**	**292.40**	**75.06**	**145.08**	**36.56**	**24.31**	52.05	292.40	**n/a**	**148.307**					
Mean	**0.14**	**0.80**	**0.41**	**1.21**	**0.40**	**0.55**	**n/a**	**n/a**	0.80	**0.41**				**0.067**	**0.076**
Maximum	**2.02**	**4.02**	**1.14**	**4.02**	**0.99**	**0.87**	**11.11**	**50.87**	**1.64**	**3.61**				**0.097**	**0.134**
										Total April and May I/I (mgd/in)	**99.4**	**28.9**	**29.8**		
										Avg. WW I/I (mgd/in)	**5.8**	**3.2**	**3.3**		


2001-'02 Overall Influent Flows
Precipitation (in) / Influent (mgd)
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
5/1/2001
5/15/2001
5/29/2001
6/12/2001
6/26/2001
7/10/2001
7/24/2001
8/7/2001
8/21/2001
9/4/2001
9/18/2001
10/2/2001
10/16/2001
10/30/2001
11/13/2001
11/27/2001
12/11/2001
12/25/2001
1/8/2002
1/22/2002
2/5/2002
2/19/2002
3/5/2002
3/19/2002
4/2/2002
4/16/2002
4/30/2002
Date
Precipitation
Influent


I/I Flow vs. Rainfall
Precipitation (in) / I-I (mdg)
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
5/1/2001
5/15/2001
5/29/2001
6/12/2001
6/26/2001
7/10/2001
7/24/2001
8/7/2001
8/21/2001
9/4/2001
9/18/2001
10/2/2001
10/16/2001
10/30/2001
11/13/2001
11/27/2001
12/11/2001
12/25/2001
1/8/2002
1/22/2002
2/5/2002
2/19/2002
3/5/2002
3/19/2002
4/2/2002
4/16/2002
4/30/2002
Date
Preciptation
I/I Flows

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028
Summary of WWTF Influent, Effluent and Performance
May 2000 through April 2001

2000 Population (Est)	**6035**
2001 Population (Est)	**6400**
Average (Est) =	***6217.5***

OVERALL YEAR FLOW AND LOADS

Parameter	Units	Year Value	Per Capita (gpcpd)
Average Daily Infiltration	mgd	0.0	
Average Daily Exfiltration	mgd	0.0	
BOD5 Loading	lbs/day	722	
Avg. Daily Domesitc Flow (ADF)	mgd	0.41	67
Max Monthly Dry Weather Flow (MMDWF)	mgd	0.46	74
Max Monthly Wet Weather Flow (MMWWF)	mgd	0.61	99
Peak Wet Weather Hydraulic Flow (WWPIF)	mgd	4.00	643

		Data May '03 - Ap' 04 Flows (mgd)	(gpcpd)	Comments
Avg. Dry Weather Daily Q (May - Oct)	**ADWF**	0.41	67	Average Dry Weather Flow
Peak Dry Weather Q (May - Oct)	**PDWF**	0.97	156	Peak Dry Weather Flow
Avg. Daily Wet Weather Q (Jan - April)	**AWWF**	0.48	77	Average Daily Q during the Winter Months
Peak Wet Weather Q (Jan - April)	**PWWF**	0.90	145	Peak Wet Weather Flow
Average Daily Q (May-Ap)	**AADF**	0.46	73	Average Annual Daily Flow
Peak Daily Annual Q (May - Ap)	**PDAF**	1.37	221	Maximum Day Q during the Year - **NOT** 5-yr PDAF
Peak Daily I/I Flow (May - Ap)		0.96		Peak Daily Flow after ADWF is Subtracted
Max. Mo. Dry Weather Q (May-Oct)	**MMDWF**	0.46	74	MMDWF invariably occurs in May
Max. Mo. Wet Weather Q (Nov - Ap)	**MMWWF**	0.61	99	MMWWF invariably occurs in January
Peak Instantaneous Flow	**PIF**	4.00	643	*2774 gpm* (ADWF *3.0) + Ap/May I/I Correlation *5-Yr 24 Hr Storm + Avg Daily Infiltration
Avg. BOD5 Loading Per Day (lbs/day)		722		
Avg. TSS Loading Per Day (lbs/day)		618		
Diurnal Peaking Factor		3.0	n/a	
5-YR 24 HR DESIGN STORM (in)		3.5	n/a	NOAA Atlas 2, Volume X, Figure 26
Avg. Daily Infiltration (mdg)		0.0	n/a	ADF during High Groundwater (Ap/May) minus ADF no Rain (June-Aug)
Exist. Yearly I/I CORR. (mgd/in rainfall)		0.86	n/a	Sum of Yearly Daily Influent - Daily ADWF / Total Year Rainfall
Exist. May and April I/I CORR. (mgd/in rainfall)		0.78	n/a	Avg. (Sum of April and May Daily Influent - Daily ADWF / April and May Rainfall)

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

Summary of Daily WWTF Influent and Precipitation
May 2002 through April 2003

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
1-May-00	0.00	0.485	0.485			0.485				0.071					
2-May-00	0.30	0.469	0.469			N/A				0.055	0.2				
3-May-00	0.13	0.463	0.463			N/A				0.049	0.4	0.2			
4-May-00	0.16	0.522	0.522			N/A				0.108	0.7	0.5			
5-May-00	0.05	0.477	0.477			N/A				0.063	1.3	0.8	0.6		
6-May-00	0.00	0.422	0.422			0.422				0.008					
7-May-00	0.00	0.470	0.470			0.470				0.056					
8-May-00	0.03	0.515	0.515			N/A				0.101	3.4				
9-May-00	0.38	0.757	0.757			N/A				0.343	0.9	1.1			
10-May-00	0.57	0.886	0.886			N/A				0.472	0.8	0.9	0.9		
11-May-00	0.07	0.633	0.633			N/A				0.219	3.1	1.1	1.0		
12-May-00	0.00	0.477	0.477			0.477				0.063					
13-May-00	0.00	0.455	0.455			0.455				0.041					
14-May-00	0.00	0.465	0.465			0.465				0.051					
15-May-00	0.07	0.426	0.426			N/A				0.012	0.2				
16-May-00	0.00	0.436	0.436			0.436				0.022					
17-May-00	0.00	0.426	0.426			0.426				0.012					
18-May-00	0.00	0.430	0.430			0.430				0.016					
19-May-00	0.04	0.450	0.450			N/A				0.036	0.9				
20-May-00	0.00	0.427	0.427			0.427				0.013					
21-May-00	0.00	0.396	0.396			0.396				0.000					
22-May-00	0.00	0.291	0.291			0.291				0.000					
23-May-00	0.06	0.404	0.404			N/A				0.000	0.0				
24-May-00	0.00	0.393	0.393			0.393				0.000					
25-May-00	0.00	0.403	0.403			0.403				0.000					
26-May-00	0.05	0.379	0.379			N/A				0.000	0.0				
27-May-00	0.12	0.403	0.403			N/A				0.000	0.0				
28-May-00	0.00	0.393	0.393			0.393				0.000					
29-May-00	0.04	0.405	0.405			N/A				0.000	0.0				
30-May-00	0.00	0.400	0.400			0.400				0.000					
31-May-00	0.07	0.293	0.293			N/A	2.14	14.25	0.46	0.000	0.0			0.087	0.062
1-Jun-00	0.00	0.329	0.329		0.329					0.000					
2-Jun-00	0.00	0.313	0.313		0.313					0.000					
3-Jun-00	0.00	0.313	0.313		0.313					0.000					
4-Jun-00	0.00	0.330	0.330		0.330					0.000					
5-Jun-00	0.00	0.256	0.256		0.256					0.000					
6-Jun-00	0.02	0.388	0.388		0.388					0.000					
7-Jun-00	0.35	0.451	0.451		0.451					0.037					
8-Jun-00	0.04	0.379	0.379		0.379					0.000					
9-Jun-00	0.08	0.352	0.352		0.352					0.000					
10-Jun-00	0.13	0.393	0.393		0.393					0.000					
11-Jun-00	0.20	0.605	0.605		0.605					0.191					
12-Jun-00	0.51	0.515	0.515		0.515					0.101					
13-Jun-00	0.00	0.419	0.419		0.419					0.005					
14-Jun-00	0.00	0.376	0.376		0.376					0.000					
15-Jun-00	0.00	0.370	0.370		0.370					0.000					
16-Jun-00	0.00	0.356	0.356		0.356					0.000					
17-Jun-00	0.00	0.366	0.366		0.366					0.000					
18-Jun-00	0.00	0.350	0.350		0.350					0.000					
19-Jun-00	0.00	0.375	0.375		0.375					0.000					
20-Jun-00	0.00	0.385	0.385		0.385					0.000					
21-Jun-00	0.00	0.365	0.365		0.365					0.000					
22-Jun-00	0.00	0.501	0.501		0.501					0.087					
23-Jun-00	0.00	0.373	0.373		0.373					0.000					
24-Jun-00	0.00	0.400	0.400		0.400					0.000					
25-Jun-00	0.00	0.379	0.379		0.379					0.000					
26-Jun-00	0.00	0.427	0.427		0.427					0.013					
27-Jun-00	0.00	0.407	0.407		0.407					0.000					

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

Summary of Daily WWTF Influent and Precipitation
May 2002 through April 2003

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
28-Jun-00	0.00	0.475	0.475		0.475					0.061					
29-Jun-00	0.00	0.465	0.465		0.465					0.051					
30-Jun-00	0.00	0.455	0.455		0.455		1.33	11.87	0.40	0.041				0.096	0.061
1-Jul-00	0.00	0.465	0.465		0.465					0.051					
2-Jul-00	0.00	0.465	0.465		0.465					0.051					
3-Jul-00	0.00	0.465	0.465		0.465					0.051					
4-Jul-00	0.07	0.393	0.393		0.393					0.000					
5-Jul-00	0.06	0.493	0.493		0.493					0.079					
6-Jul-00	0.00	0.403	0.403		0.403					0.000					
7-Jul-00	0.00	0.483	0.483		0.483					0.069					
8-Jul-00	0.00	0.375	0.375		0.375					0.000					
9-Jul-00	0.00	0.390	0.390		0.390					0.000					
10-Jul-00	0.00	0.400	0.400		0.400					0.000					
11-Jul-00	0.00	0.398	0.398		0.398					0.000					
12-Jul-00	0.00	0.423	0.423		0.423					0.009					
13-Jul-00	0.00	0.375	0.375		0.375					0.000					
14-Jul-00	0.00	0.400	0.400		0.400					0.000					
15-Jul-00	0.00	0.423	0.423		0.423					0.009					
16-Jul-00	0.00	0.408	0.408		0.408					0.000					
17-Jul-00	0.00	0.455	0.455		0.455					0.041					
18-Jul-00	0.00	0.399	0.399		0.399					0.000					
19-Jul-00	0.00	0.425	0.425		0.425					0.011					
20-Jul-00	0.00	0.465	0.465		0.465					0.051					
21-Jul-00	0.00	0.440	0.440		0.440					0.026					
22-Jul-00	0.00	0.412	0.412		0.412					0.000					
23-Jul-00	0.00	0.400	0.400		0.400					0.000					
24-Jul-00	0.00	0.420	0.420		0.420					0.006					
25-Jul-00	0.00	0.399	0.399		0.399					0.000					
26-Jul-00	0.00	0.400	0.400		0.400					0.000					
27-Jul-00	0.00	0.395	0.395		0.395					0.000					
28-Jul-00	0.00	0.395	0.395		0.395					0.000					
29-Jul-00	0.00	0.400	0.400		0.400					0.000					
30-Jul-00	0.00	0.350	0.350		0.350					0.000					
31-Jul-00	0.00	0.375	0.375		0.375		0.13	12.89	0.42	0.000				0.107	0.078
1-Aug-00	0.00	0.415	0.415		0.415					0.001					
2-Aug-00	0.00	0.375	0.375		0.375					0.000					
3-Aug-00	0.00	0.393	0.393		0.393					0.000					
4-Aug-00	0.00	0.400	0.400		0.400					0.000					
5-Aug-00	0.00	0.425	0.425		0.425					0.011					
6-Aug-00	0.00	0.398	0.398		0.398					0.000					
7-Aug-00	0.00	0.410	0.410		0.410					0.000					
8-Aug-00	0.00	0.399	0.399		0.399					0.000					
9-Aug-00	0.00	0.360	0.360		0.360					0.000					
10-Aug-00	0.00	0.373	0.373		0.373					0.000					
11-Aug-00	0.00	0.352	0.352		0.352					0.000					
12-Aug-00	0.00	0.359	0.359		0.359					0.000					
13-Aug-00	0.00	0.383	0.383		0.383					0.000					
14-Aug-00	0.00	0.385	0.385		0.385					0.000					
15-Aug-00	0.00	0.379	0.379		0.379					0.000					
16-Aug-00	0.00	0.373	0.373		0.373					0.000					
17-Aug-00	0.00	0.363	0.363		0.363					0.000					
18-Aug-00	0.00	0.383	0.383		0.383					0.000					
19-Aug-00	0.04	0.379	0.379		0.379					0.000					
20-Aug-00	0.00	0.404	0.404		0.404					0.000					
21-Aug-00	0.00	0.383	0.383		0.383					0.000					
22-Aug-00	0.00	0.403	0.403		0.403					0.000					
23-Aug-00	0.00	0.378	0.378		0.378					0.000					
24-Aug-00	0.00	0.385	0.385		0.385					0.000					

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

Summary of Daily WWTF Influent and Precipitation
May 2002 through April 2003

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
25-Aug-00	0.00	0.384	0.384		0.384					0.000					
26-Aug-00	0.00	0.380	0.380		0.380					0.000					
27-Aug-00	0.00	0.412	0.412		0.412					0.000					
28-Aug-00	0.00	0.373	0.373		0.373					0.000					
29-Aug-00	0.00	0.389	0.389		0.389					0.000					
30-Aug-00	0.00	0.369	0.369		0.369					0.000					
31-Aug-00	0.00	0.359	0.359		0.359		0.04	11.92	0.38	0.000				0.108	0.059
1-Sep-00	0.01	0.420	0.420							0.006					
2-Sep-00	0.22	0.545	0.545							0.131					
3-Sep-00	0.38	0.487	0.487							0.073					
4-Sep-00	0.01	0.428	0.428							0.014					
5-Sep-00	0.00	0.401	0.401							0.000					
6-Sep-00	0.00	0.364	0.364							0.000					
7-Sep-00	0.00	0.378	0.378							0.000					
8-Sep-00	0.13	0.354	0.354							0.000					
9-Sep-00	0.00	0.364	0.364							0.000					
10-Sep-00	0.07	0.399	0.399							0.000					
11-Sep-00	0.00	0.431	0.431							0.017					
12-Sep-00	0.00	0.374	0.374							0.000					
13-Sep-00	0.00	0.362	0.362							0.000					
14-Sep-00	0.00	0.371	0.371							0.000					
15-Sep-00	0.00	0.360	0.360							0.000					
16-Sep-00	0.00	0.367	0.367							0.000					
17-Sep-00	0.00	0.406	0.406							0.000					
18-Sep-00	0.00	0.381	0.381							0.000					
19-Sep-00	0.00	0.389	0.389							0.000					
20-Sep-00	0.00	0.364	0.364							0.000					
21-Sep-00	0.00	0.385	0.385							0.000					
22-Sep-00	0.00	0.385	0.385							0.000					
23-Sep-00	0.00	0.368	0.368							0.000					
24-Sep-00	0.00	0.402	0.402							0.000					
25-Sep-00	0.00	0.359	0.359							0.000					
26-Sep-00	0.00	0.379	0.379							0.000					
27-Sep-00	0.00	0.362	0.362							0.000					
28-Sep-00	0.00	0.357	0.357							0.000					
29-Sep-00	0.00	0.372	0.372							0.000					
30-Sep-00	0.00	0.382	0.382				0.82	11.70	0.39	0.000				0.090	0.047
1-Oct-00	0.19	0.418	0.418							0.004					
2-Oct-00	0.00	0.358	0.358							0.000					
3-Oct-00	0.00	0.384	0.384							0.000					
4-Oct-00	0.00	0.358	0.358							0.000					
5-Oct-00	0.00	0.383	0.383							0.000					
6-Oct-00	0.00	0.331	0.331							0.000					
7-Oct-00	0.00	0.405	0.405							0.000					
8-Oct-00	0.00	0.427	0.427							0.013					
9-Oct-00	1.25	0.970	0.970							0.556					
10-Oct-00	0.18	0.496	0.496							0.082					
11-Oct-00	0.00	0.389	0.389							0.000					
12-Oct-00	0.00	0.389	0.389							0.000					
13-Oct-00	0.09	0.456	0.456							0.042					
14-Oct-00	0.00	0.398	0.398							0.000					
15-Oct-00	0.05	0.430	0.430							0.016					
16-Oct-00	0.00	0.365	0.365							0.000					
17-Oct-00	0.00	0.408	0.408							0.000					
18-Oct-00	0.07	0.385	0.385							0.000					
19-Oct-00	0.00	0.511	0.511							0.097					
20-Oct-00	0.48	0.669	0.669							0.255					
21-Oct-00	0.00	0.448	0.448							0.034					

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22-Oct-00	0.10	0.429	0.429							0.015					
23-Oct-00	0.00	0.405	0.405							0.000					
24-Oct-00	0.00	0.380	0.380							0.000					
25-Oct-00	0.00	0.378	0.378							0.000					
26-Oct-00	0.00	0.398	0.398							0.000					
27-Oct-00	0.06	0.418	0.418							0.004					
28-Oct-00	0.00	0.480	0.480							0.066					
29-Oct-00	0.49	0.450	0.450							0.036					
30-Oct-00	0.00	0.386	0.386							0.000					
31-Oct-00	0.00	0.396	0.396				2.96	13.50	0.44	0.000				0.122	0.080
1-Nov-00	0.12	0.436								0.022					
2-Nov-00	0.15	0.437								0.023					
3-Nov-00	0.03	0.383								0.000					
4-Nov-00	0.03	0.414								0.000					
5-Nov-00	0.00	0.422								0.008					
6-Nov-00	0.05	0.407								0.000					
7-Nov-00	0.06	0.433								0.019					
8-Nov-00	0.26	0.528								0.114					
9-Nov-00	0.42	0.343								0.000					
10-Nov-00	0.02	0.424								0.010					
11-Nov-00	0.00	0.491								0.077					
12-Nov-00	0.00	0.439								0.025					
13-Nov-00	0.00	0.393								0.000					
14-Nov-00	0.00	0.413								0.000					
15-Nov-00	0.00	0.393								0.000					
16-Nov-00	0.00	0.410								0.000					
17-Nov-00	0.00	0.365								0.000					
18-Nov-00	0.00	0.394								0.000					
19-Nov-00	0.00	0.415								0.001					
20-Nov-00	0.03	0.377								0.000					
21-Nov-00	0.00	0.392								0.000					
22-Nov-00	0.00	0.383								0.000					
23-Nov-00	0.00	0.742								0.328					
24-Nov-00	0.00	0.441								0.027					
25-Nov-00	0.94	0.532								0.118					
26-Nov-00	0.02	0.616								0.202					
27-Nov-00	0.32	0.619								0.205					
28-Nov-00	0.00	0.480								0.066					
29-Nov-00	0.38	0.791								0.377					
30-Nov-00	0.31	0.533					3.14	13.85	0.46	0.119				0.092	0.070
1-Dec-00	0.07	0.512								0.098					
2-Dec-00	0.08	0.538								0.124					
3-Dec-00	0.00	0.476								0.062					
4-Dec-00	0.00	0.441								0.027					
5-Dec-00	0.00	0.406								0.000					
6-Dec-00	0.01	0.400								0.000					
7-Dec-00	0.00	0.405								0.000					
8-Dec-00	0.00	0.400								0.000					
9-Dec-00	0.03	0.401								0.000					
10-Dec-00	0.03	0.423								0.009					
11-Dec-00	0.04	0.432								0.018					
12-Dec-00	0.29	0.632								0.218					
13-Dec-00	0.37	1.199								0.785					
14-Dec-00	0.41	1.173								0.759					
15-Dec-00	0.25	0.723								0.309					
16-Dec-00	0.17	0.721								0.307					
17-Dec-00	0.15	0.614								0.200					
18-Dec-00	0.00	0.512								0.098					

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19-Dec-00	0.17	0.583								0.169					
20-Dec-00	0.21	0.665								0.251					
21-Dec-00	0.57	1.373								0.959					
22-Dec-00	1.39	1.185								0.771					
23-Dec-00	0.00	0.994								0.580					
24-Dec-00	0.00	0.678								0.264					
25-Dec-00	0.38	0.518								0.104					
26-Dec-00	0.00	0.511								0.097					
27-Dec-00	0.05	0.477								0.063					
28-Dec-00	0.00	0.375								0.000					
29-Dec-00	0.00	0.408								0.000					
30-Dec-00	0.03	0.425								0.011					
31-Dec-00	0.03	0.429					4.73	19.03	0.61	0.015				0.103	0.067
1-Jan-01	0.00	0.425		0.425						0.011					
2-Jan-01	0.00	0.417		0.417						0.003					
3-Jan-01	0.00	0.401		0.401						0.000					
4-Jan-01	0.00	0.402		0.402						0.000					
5-Jan-01	0.02	0.378		0.378						0.000					
6-Jan-01	0.00	0.389		0.389						0.000					
7-Jan-01	0.00	0.429		0.429						0.015					
8-Jan-01	0.12	0.444		0.444						0.030					
9-Jan-01	0.21	0.473		0.473						0.059					
10-Jan-01	0.07	0.420		0.420						0.006					
11-Jan-01	0.00	0.402		0.402						0.000					
12-Jan-01	0.07	0.392		0.392						0.000					
13-Jan-01	0.00	0.497		0.497						0.083					
14-Jan-01	0.38	0.448		0.448						0.034					
15-Jan-01	0.00	0.451		0.451						0.037					
16-Jan-01	0.00	0.402		0.402						0.000					
17-Jan-01	0.00	0.406		0.406						0.000					
18-Jan-01	0.00	0.457		0.457						0.043					
19-Jan-01	0.03	0.405		0.405						0.000					
20-Jan-01	0.51	0.509		0.509						0.095					
21-Jan-01	0.00	0.669		0.669						0.255					
22-Jan-01	0.00	0.495		0.495						0.081					
23-Jan-01	0.00	0.537		0.537						0.123					
24-Jan-01	0.26	0.681		0.681						0.267					
25-Jan-01	0.21	0.681		0.681						0.267					
26-Jan-01	0.00	0.514		0.514						0.100					
27-Jan-01	0.00	0.503		0.503						0.089					
28-Jan-01	0.00	0.520		0.520						0.106					
29-Jan-01	0.33	0.517		0.517						0.103					
30-Jan-01	0.00	0.456		0.456						0.042					
31-Jan-01	0.00	0.441		0.441			2.21	14.56	0.47	0.027				0.148	0.156
1-Feb-01	0.00	0.434		0.434						0.020					
2-Feb-01	0.24	0.472		0.472						0.058					
3-Feb-01	0.12	0.653		0.653						0.239					
4-Feb-01	0.23	0.618		0.618						0.204					
5-Feb-01	0.00	0.508		0.508						0.094					
6-Feb-01	0.03	0.490		0.490						0.076					
7-Feb-01	0.00	0.435		0.435						0.021					
8-Feb-01	0.06	0.467		0.467						0.053					
9-Feb-01	0.00	0.442		0.442						0.028					
10-Feb-01	0.28	0.545		0.545						0.131					
11-Feb-01	0.00	0.517		0.517						0.103					
12-Feb-01	0.00	0.449		0.449						0.035					
13-Feb-01	0.00	0.415		0.415						0.001					
14-Feb-01	0.00	0.401		0.401						0.000					

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15-Feb-01	0.06	0.427		0.427						0.013					
16-Feb-01	0.09	0.435		0.435						0.021					
17-Feb-01	0.00	0.447		0.447						0.033					
18-Feb-01	0.22	0.482		0.482						0.068					
19-Feb-01	0.00	0.450		0.450						0.036					
20-Feb-01	0.00	0.529		0.529						0.115					
21-Feb-01	0.60	0.735		0.735						0.321					
22-Feb-01	0.00	0.579		0.579						0.165					
23-Feb-01	0.00	0.484		0.484						0.070					
24-Feb-01	0.00	0.480		0.480						0.066					
25-Feb-01	0.00	0.455		0.455						0.041					
26-Feb-01	0.00	0.439		0.439						0.025					
27-Feb-01	0.00	0.434		0.434						0.020					
28-Feb-01	0.00	0.429		0.429						0.015				0.135	0.149
1-Mar-01	0.37	0.789		0.789			2.30	14.44	0.50	0.375					
2-Mar-01	0.19	0.645		0.645						0.231					
3-Mar-01	0.00	0.532		0.532						0.118					
4-Mar-01	0.12	0.568		0.568						0.154					
5-Mar-01	0.00	0.475		0.475						0.061					
6-Mar-01	0.00	0.462		0.462						0.048					
7-Mar-01	0.00	0.440		0.440						0.026					
8-Mar-01	0.02	0.448		0.448						0.034					
9-Mar-01	0.03	0.436		0.436						0.022					
10-Mar-01	0.00	0.441		0.441						0.027					
11-Mar-01	0.00	0.438		0.438						0.024					
12-Mar-01	0.00	0.408		0.408						0.000					
13-Mar-01	0.00	0.413		0.413						0.000					
14-Mar-01	0.00	0.597		0.597						0.183					
15-Mar-01	0.11	0.437		0.437						0.023					
16-Mar-01	0.15	0.600		0.600						0.186					
17-Mar-01	0.00	0.600		0.600						0.186					
18-Mar-01	0.42	0.559		0.559						0.145					
19-Mar-01	0.00	0.485		0.485						0.071					
20-Mar-01	0.00	0.455		0.455						0.041					
21-Mar-01	0.00	0.415		0.415						0.001					
22-Mar-01	0.00	0.425		0.425						0.011					
23-Mar-01	0.00	0.383		0.383						0.000					
24-Mar-01	0.00	0.567		0.567						0.153					
25-Mar-01	0.67	0.581		0.581						0.167					
26-Mar-01	0.00	0.575		0.575						0.161					
27-Mar-01	0.46	0.900		0.900						0.486					
28-Mar-01	0.04	0.642		0.642						0.228					
29-Mar-01	0.08	0.528		0.528						0.114					
30-Mar-01	0.00	0.479		0.479						0.065					
31-Mar-01	0.00	0.490		0.490						0.076					
1-Apr-01	0.00	0.531		0.531		0.531	2.29	15.96	0.51	0.117				0.161	0.166
2-Apr-01	0.15	0.495		0.495		N/A				0.081	0.5				
3-Apr-01	0.00	0.463		0.463		0.463				0.049					
4-Apr-01	0.00	0.429		0.429		0.429				0.015					
5-Apr-01	0.00	0.438		0.438		0.438				0.024					
6-Apr-01	0.13	0.458		0.458		N/A				0.044	0.3				
7-Apr-01	0.00	0.451		0.451		0.451				0.037					
8-Apr-01	0.18	0.520		0.520		N/A				0.106	0.6				
9-Apr-01	0.01	0.455		0.455		N/A				0.041	4.1	0.8			
10-Apr-01	0.13	0.534		0.534		N/A				0.120	0.9	1.2	0.8		
11-Apr-01	0.06	0.446		0.446		N/A				0.032	0.5	0.8	1.0		
12-Apr-01	0.02	0.456		0.456		N/A				0.042	2.1	0.9	0.9		
13-Apr-01	0.00	0.405		0.405		0.405				0.000					

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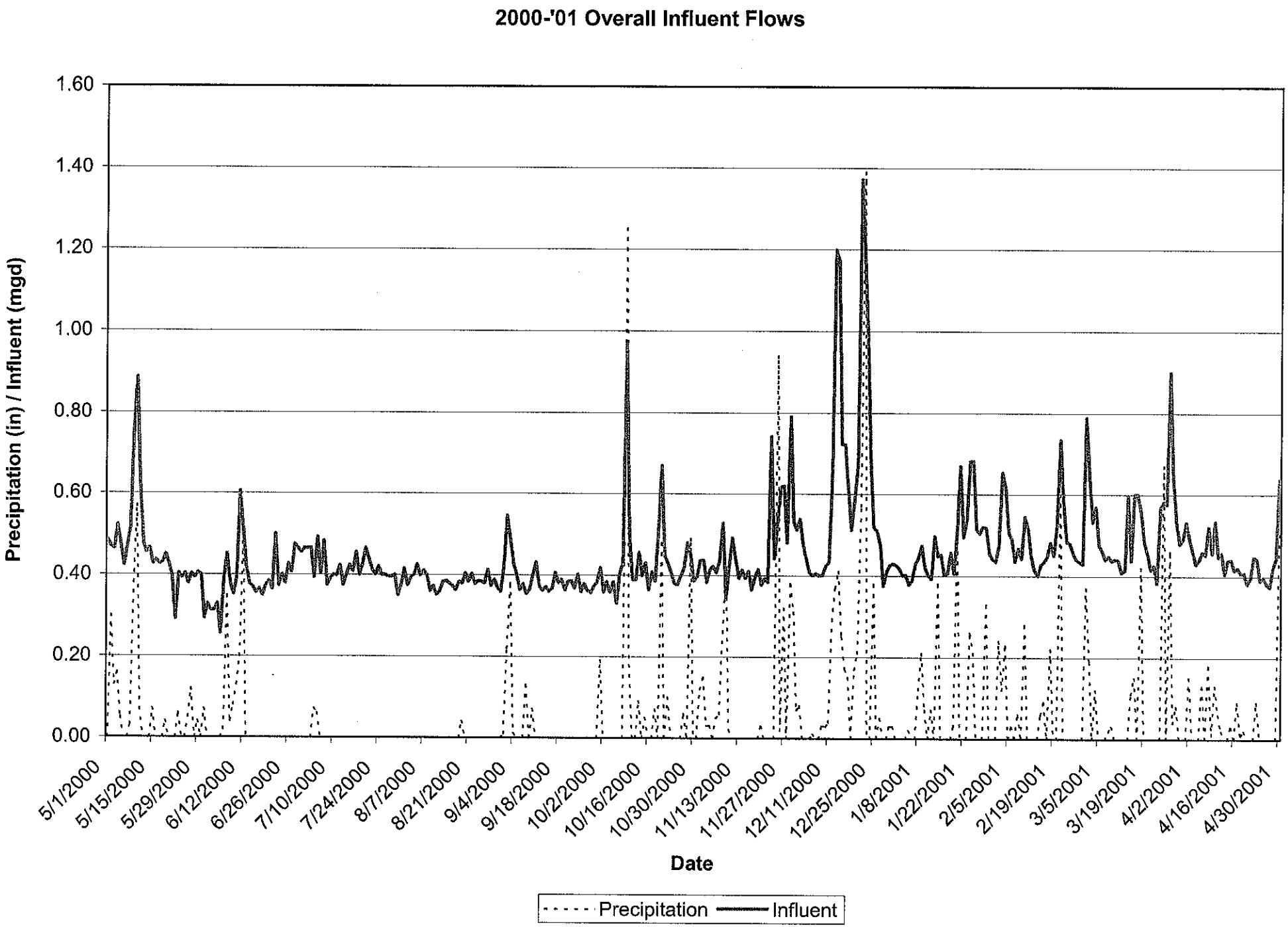
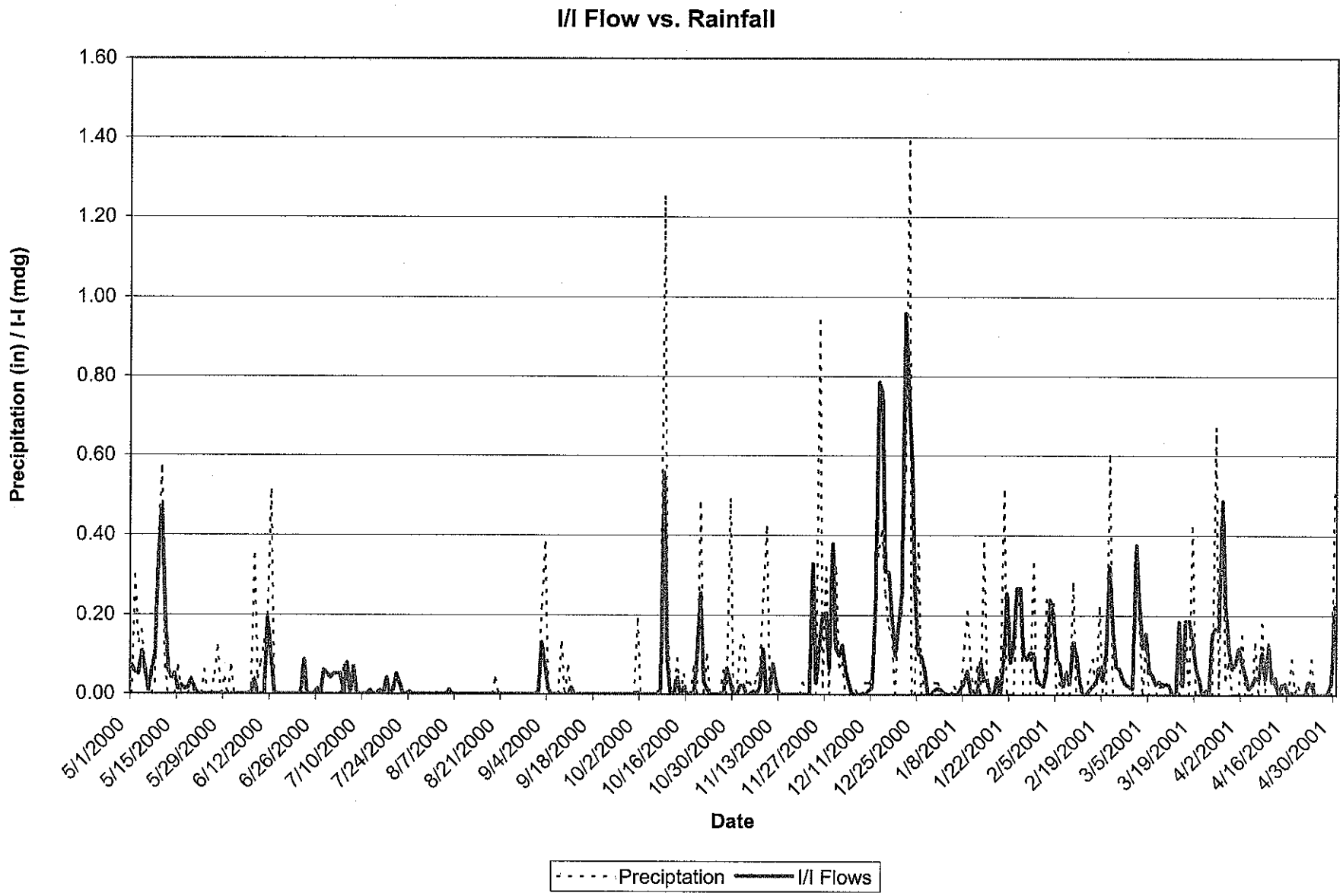
14-Apr-01	0.00	0.438		0.438		0.438				0.024					
15-Apr-01	0.03	0.440		0.440		N/A				0.026	0.9				
16-Apr-01	0.00	0.414		0.414		0.414				0.000					
17-Apr-01	0.09	0.420		0.420		N/A				0.006	0.1				
18-Apr-01	0.01	0.407		0.407		N/A				0.000	0.0	0.1			
19-Apr-01	0.02	0.408		0.408		N/A				0.000	0.0		0.1		
20-Apr-01	0.00	0.381		0.381		0.381				0.000					
21-Apr-01	0.00	0.395		0.395		0.395				0.000					
22-Apr-01	0.00	0.446		0.446		0.446				0.032					
23-Apr-01	0.09	0.442		0.442		N/A				0.028	0.3				
24-Apr-01	0.00	0.389		0.389		0.389				0.000					
25-Apr-01	0.00	0.397		0.397		0.397				0.000					
26-Apr-01	0.00	0.381		0.381		0.381				0.000					
27-Apr-01	0.00	0.374		0.374		0.374				0.000					
28-Apr-01	0.00	0.420		0.420		0.420				0.006					
29-Apr-01	0.00	0.443		0.443		0.443				0.029					
30-Apr-01	0.52	0.637		0.637		N/A	1.44	12.78	0.43	0.223	0.4			0.145	0.197
Total	**23.53**	**166.74**	**76.13**	**57.74**	**36.68**	**13.96**	23.53	166.74	**n/a**	**20.867**					
Mean	**0.06**	**0.46**	**0.41**	**0.48**	**0.40**	**0.42**	**n/a**	**n/a**	0.46	**0.06**				**0.116**	**0.099**
Maximum	**1.39**	**1.37**	**0.97**	**0.90**	**0.61**	**0.53**	**4.73**	**19.03**	**0.61**	**0.96**				**0.161**	**0.197**
										Total April and May I/I (mgd/in)	**22.7**	**8.4**	**5.4**		
										Avg. WW I/I (mgd/in)	**0.8**	**0.8**	**0.8**		


2000-'01 Overall Influent Flows
Precipitation (in) / Influent (mgd)
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
5/1/2000
5/15/2000
5/29/2000
6/12/2000
6/26/2000
7/10/2000
7/24/2000
8/7/2000
8/21/2000
9/4/2000
9/18/2000
10/2/2000
10/16/2000
10/30/2000
11/13/2000
11/27/2000
12/11/2000
12/25/2000
1/8/2001
1/22/2001
2/5/2001
2/19/2001
3/5/2001
3/19/2001
4/2/2001
4/16/2001
4/30/2001
Date
Precipitation
Influent


I/I Flow vs. Rainfall
Precipitation (in) / I-I (mdg)
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
5/1/2000
5/15/2000
5/29/2000
6/12/2000
6/26/2000
7/10/2000
7/24/2000
8/7/2000
8/21/2000
9/4/2000
9/18/2000
10/2/2000
10/16/2000
10/30/2000
11/13/2000
11/27/2000
12/11/2000
12/25/2000
1/8/2001
1/22/2001
2/5/2001
2/19/2001
3/5/2001
3/19/2001
4/2/2001
4/16/2001
4/30/2001
Date
Preciptation
I/I Flows

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028
Summary of WWTF Influent, Effluent and Performance
May 1999 through April 2000

1999 Population (Est)	**5803**
2000 Population (Est)	**6035**
Average (Est) =	***5919***

OVERALL YEAR FLOW AND LOADS

Parameter	Units	Year Value	Per Capita (gpcpd)
Average Daily Infiltration	mgd	0.1	
Average Daily Exfiltration	mgd	0.0	
BOD5 Loading	lbs/day	688	
Avg. Daily Domesitc Flow (ADF)	mgd	0.39	65
Max Monthly Dry Weather Flow (MMDWF)	mgd	0.44	74
Max Monthly Wet Weather Flow (MMWWF)	mgd	1.30	220
Peak Wet Weather Hydraulic Flow (WWPIF)	mgd	8.42	1422

		Data May '03 - Ap' 04 Flows (mgd)	(gpcpd)	Comments
Avg. Dry Weather Daily Q (May - Oct)	**ADWF**	0.39	65	Average Dry Weather Flow
Peak Dry Weather Q (May - Oct)	**PDWF**	0.94	158	Peak Dry Weather Flow
Avg. Daily Wet Weather Q (Jan - April)	**AWWF**	0.97	164	Average Daily Q during the Winter Months
Peak Wet Weather Q (Jan - April)	**PWWF**	3.54	598	Peak Wet Weather Flow
Average Daily Q (May-Ap)	**AADF**	0.67	114	Average Annual Daily Flow
Peak Daily Annual Q (May - Ap)	**PDAF**	3.81	644	Maximum Day Q during the Year - **NOT** 5-yr PDAF
Peak Daily I/I Flow (May - Ap)		3.43		Peak Daily Flow after ADWF is Subtracted
Max. Mo. Dry Weather Q (May-Oct)	**MMDWF**	0.44	74	MMDWF invariably occurs in May
Max. Mo. Wet Weather Q (Nov - Ap)	**MMWWF**	1.30	220	MMWWF invariably occurs in January
Peak Instantaneous Flow	**PIF**	8.42	1422	*5845 gpm* (ADWF *3.0) + Ap/May I/I Correlation *5-Yr 24 Hr Storm + Avg Daily Infiltration
Avg. BOD5 Loading Per Day (lbs/day)		688		
Avg. TSS Loading Per Day (lbs/day)		588		
Diurnal Peaking Factor		3.0	n/a	
5-YR 24 HR DESIGN STORM (in)		3.5	n/a	NOAA Atlas 2, Volume X, Figure 26
Avg. Daily Infiltration (mdg)		0.1	n/a	ADF during High Groundwater (Ap/May) minus ADF no Rain (June-Aug)
Exist. Yearly I/I CORR. (mgd/in rainfall)		2.25	n/a	Sum of Yearly Daily Influent - Daily ADWF / Total Year Rainfall
Exist. May and April I/I CORR. (mgd/in rainfall)		2.06	n/a	Avg. (Sum of April and May Daily Influent - Daily ADWF / April and May Rainfall)

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

Summary of Daily WWTF Influent and Precipitation
May 2002 through April 2003

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
1-May-99	0.06	0.429	0.429			N/A				0.041	0.7				
2-May-99	0.07	0.543	0.543			N/A				0.155	2.2	1.5			
3-May-99	0.18	0.484	0.484			N/A				0.096	0.5	1.0			
4-May-99	0.13	0.418	0.418			N/A				0.030	0.2	0.4			
5-May-99	0.00	0.378	0.378			0.378				0.000			0.4		
6-May-99	0.15	0.561	0.561			N/A				0.173	1.2				
7-May-99	0.30	0.617	0.617			N/A				0.229	0.8	0.9			
8-May-99	0.05	0.503	0.503			N/A				0.115	2.3	1.0			
9-May-99	0.04	0.439	0.439			N/A				0.051	1.3	1.9			
10-May-99	0.04	0.399	0.399			N/A				0.011	0.3	0.8			
11-May-99	0.18	0.494	0.494			N/A				0.106	0.6	0.5			
12-May-99	0.00	0.422	0.422			0.422				0.034					
13-May-99	0.23	0.421	0.421			N/A				0.033	0.1				
14-May-99	0.19	0.458	0.458			N/A				0.070	0.4	0.2			
15-May-99	0.00	0.409	0.409			0.409				0.021					
16-May-99	0.01	0.483	0.483			N/A				0.095	9.5				
17-May-99	0.35	0.603	0.603			N/A				0.215	0.6	0.9			
18-May-99	0.03	0.548	0.548			N/A				0.160	5.3	1.0			
19-May-99	0.00	0.492	0.492			0.492				0.104					
20-May-99	0.00	0.401	0.401			0.401				0.013					
21-May-99	0.00	0.376	0.376			0.376				0.000					
22-May-99	0.00	0.376	0.376			0.376				0.000					
23-May-99	0.00	0.387	0.387			0.387				0.000					
24-May-99	0.00	0.380	0.380			0.380				0.000					
25-May-99	0.00	0.363	0.363			0.363				0.000					
26-May-99	0.00	0.355	0.355			0.355				0.000					
27-May-99	0.00	0.361	0.361			0.361				0.000					
28-May-99	0.00	0.346	0.346			0.346				0.000					
29-May-99	0.00	0.343	0.343			0.343				0.000					
30-May-99	0.00	0.320	0.320			0.320				0.000					
31-May-99	0.01	0.384	0.384			N/A	2.02	13.49	0.44	0.000	0.0			0.087	0.062
1-Jun-99	0.02	0.387	0.387		0.387					0.000					
2-Jun-99	0.00	0.383	0.383		0.383					0.000					
3-Jun-99	0.00	0.365	0.365		0.365					0.000					
4-Jun-99	0.00	0.385	0.385		0.385					0.000					
5-Jun-99	0.12	0.342	0.342		0.342					0.000					
6-Jun-99	0.13	0.416	0.416		0.416					0.028					
7-Jun-99	0.00	0.405	0.405		0.405					0.017					
8-Jun-99	0.14	0.376	0.376		0.376					0.000					
9-Jun-99	0.00	0.357	0.357		0.357					0.000					
10-Jun-99	0.00	0.352	0.352		0.352					0.000					
11-Jun-99	0.00	0.352	0.352		0.352					0.000					
12-Jun-99	0.00	0.366	0.366		0.366					0.000					
13-Jun-99	0.00	0.367	0.367		0.367					0.000					
14-Jun-99	0.00	0.373	0.373		0.373					0.000					
15-Jun-99	0.00	0.352	0.352		0.352					0.000					
16-Jun-99	0.00	0.352	0.352		0.352					0.000					
17-Jun-99	0.00	0.347	0.347		0.347					0.000					
18-Jun-99	0.00	0.342	0.342		0.342					0.000					
19-Jun-99	0.00	0.347	0.347		0.347					0.000					
20-Jun-99	0.08	0.505	0.505		0.505					0.117					
21-Jun-99	0.25	0.414	0.414		0.414					0.026					
22-Jun-99	0.00	0.372	0.372		0.372					0.000					
23-Jun-99	0.00	0.353	0.353		0.353					0.000					
24-Jun-99	0.35	0.389	0.389		0.389					0.001					
25-Jun-99	0.10	0.361	0.361		0.361					0.000					
26-Jun-99	0.00	0.356	0.356		0.356					0.000					
27-Jun-99	0.00	0.365	0.365		0.365					0.000					

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

Summary of Daily WWTF Influent and Precipitation
May 2002 through April 2003

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
28-Jun-99	0.00	0.371	0.371		0.371					0.000					
29-Jun-99	0.00	0.365	0.365		0.365					0.000					
30-Jun-99	0.03	0.349	0.349		0.349		1.22	11.17	0.37	0.000				0.096	0.061
1-Jul-99	0.00	0.356	0.356		0.356					0.000					
2-Jul-99	0.10	0.381	0.381		0.381					0.000					
3-Jul-99	0.05	0.369	0.369		0.369					0.000					
4-Jul-99	0.13	0.364	0.364		0.364					0.000					
5-Jul-99	0.00	0.375	0.375		0.375					0.000					
6-Jul-99	0.00	0.374	0.374		0.374					0.000					
7-Jul-99	0.00	0.354	0.354		0.354					0.000					
8-Jul-99	0.00	0.356	0.356		0.356					0.000					
9-Jul-99	0.00	0.354	0.354		0.354					0.000					
10-Jul-99	0.00	0.358	0.358		0.358					0.000					
11-Jul-99	0.00	0.358	0.358		0.358					0.000					
12-Jul-99	0.00	0.370	0.370		0.370					0.000					
13-Jul-99	0.00	0.367	0.367		0.367					0.000					
14-Jul-99	0.00	0.362	0.362		0.362					0.000					
15-Jul-99	0.00	0.362	0.362		0.362					0.000					
16-Jul-99	0.00	0.345	0.345		0.345					0.000					
17-Jul-99	0.00	0.363	0.363		0.363					0.000					
18-Jul-99	0.00	0.386	0.386		0.386					0.000					
19-Jul-99	0.00	0.372	0.372		0.372					0.000					
20-Jul-99	0.00	0.363	0.363		0.363					0.000					
21-Jul-99	0.00	0.370	0.370		0.370					0.000					
22-Jul-99	0.00	0.348	0.348		0.348					0.000					
23-Jul-99	0.00	0.351	0.351		0.351					0.000					
24-Jul-99	0.00	0.337	0.337		0.337					0.000					
25-Jul-99	0.00	0.361	0.361		0.361					0.000					
26-Jul-99	0.00	0.352	0.352		0.352					0.000					
27-Jul-99	0.00	0.370	0.370		0.370					0.000					
28-Jul-99	0.00	0.340	0.340		0.340					0.000					
29-Jul-99	0.00	0.357	0.357		0.357					0.000					
30-Jul-99	0.00	0.330	0.330		0.330					0.000					
31-Jul-99	0.00	0.336	0.336		0.336		0.28	11.14	0.36	0.000				0.107	0.078
1-Aug-99	0.00	0.363	0.363		0.363					0.000					
2-Aug-99	0.00	0.341	0.341		0.341					0.000					
3-Aug-99	0.00	0.353	0.353		0.353					0.000					
4-Aug-99	0.00	0.353	0.353		0.353					0.000					
5-Aug-99	0.00	0.369	0.369		0.369					0.000					
6-Aug-99	0.00	0.374	0.374		0.374					0.000					
7-Aug-99	0.52	0.470	0.470		0.470					0.082					
8-Aug-99	0.04	0.404	0.404		0.404					0.016					
9-Aug-99	0.00	0.373	0.373		0.373					0.000					
10-Aug-99	0.00	0.380	0.380		0.380					0.000					
11-Aug-99	0.00	0.358	0.358		0.358					0.000					
12-Aug-99	0.00	0.360	0.360		0.360					0.000					
13-Aug-99	0.00	0.363	0.363		0.363					0.000					
14-Aug-99	0.10	0.345	0.345		0.345					0.000					
15-Aug-99	0.00	0.392	0.392		0.392					0.004					
16-Aug-99	0.00	0.380	0.380		0.380					0.000					
17-Aug-99	0.00	0.377	0.377		0.377					0.000					
18-Aug-99	0.00	0.356	0.356		0.356					0.000					
19-Aug-99	0.00	0.372	0.372		0.372					0.000					
20-Aug-99	0.00	0.387	0.387		0.387					0.000					
21-Aug-99	0.00	0.348	0.348		0.348					0.000					
22-Aug-99	0.00	0.384	0.384		0.384					0.000					
23-Aug-99	0.00	0.392	0.392		0.392					0.004					
24-Aug-99	0.00	0.416	0.416		0.416					0.028					

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

Summary of Daily WWTF Influent and Precipitation
May 2002 through April 2003

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
25-Aug-99	0.00	0.369	0.369		0.369					0.000					
26-Aug-99	0.00	0.344	0.344		0.344					0.000					
27-Aug-99	0.00	0.343	0.343		0.343					0.000					
28-Aug-99	0.00	0.361	0.361		0.361					0.000					
29-Aug-99	0.00	0.403	0.403		0.403					0.015					
30-Aug-99	0.02	0.390	0.390		0.390					0.002					
31-Aug-99	0.27	0.368	0.368		0.368		0.95	11.59	0.37	0.000				0.108	0.059
1-Sep-99	0.00	0.376	0.376							0.000					
2-Sep-99	0.00	0.365	0.365							0.000					
3-Sep-99	0.00	0.366	0.366							0.000					
4-Sep-99	0.00	0.317	0.317							0.000					
5-Sep-99	0.00	0.357	0.357							0.000					
6-Sep-99	0.00	0.381	0.381							0.000					
7-Sep-99	0.00	0.383	0.383							0.000					
8-Sep-99	0.00	0.295	0.295							0.000					
9-Sep-99	0.00	0.372	0.372							0.000					
10-Sep-99	0.00	0.458	0.458							0.070					
11-Sep-99	0.00	0.391	0.391							0.003					
12-Sep-99	0.00	0.387	0.387							0.000					
13-Sep-99	0.00	0.372	0.372							0.000					
14-Sep-99	0.00	0.545	0.545							0.157					
15-Sep-99	0.00	0.566	0.566							0.178					
16-Sep-99	0.00	0.577	0.577							0.189					
17-Sep-99	0.00	0.383	0.383							0.000					
18-Sep-99	0.00	0.482	0.482							0.094					
19-Sep-99	0.00	0.552	0.552							0.164					
20-Sep-99	0.00	0.295	0.295							0.000					
21-Sep-99	0.00	0.362	0.362							0.000					
22-Sep-99	0.00	0.349	0.349							0.000					
23-Sep-99	0.02	0.373	0.373							0.000					
24-Sep-99	0.00	0.419	0.419							0.031					
25-Sep-99	0.03	0.415	0.415							0.027					
26-Sep-99	0.00	0.441	0.441							0.053					
27-Sep-99	0.00	0.279	0.279							0.000					
28-Sep-99	0.00	0.223	0.223							0.000					
29-Sep-99	0.00	0.311	0.311							0.000					
30-Sep-99	0.00	0.354	0.354				0.05	11.75	0.39	0.000				0.090	0.047
1-Oct-99	0.00	0.331	0.331							0.000					
2-Oct-99	0.00	0.329	0.329							0.000					
3-Oct-99	0.00	0.373	0.373							0.000					
4-Oct-99	0.00	0.348	0.348							0.000					
5-Oct-99	0.00	0.429	0.429							0.041					
6-Oct-99	0.19	0.356	0.356							0.000					
7-Oct-99	0.00	0.363	0.363							0.000					
8-Oct-99	0.09	0.366	0.366							0.000					
9-Oct-99	0.00	0.366	0.366							0.000					
10-Oct-99	0.00	0.391	0.391							0.003					
11-Oct-99	0.00	0.364	0.364							0.000					
12-Oct-99	0.00	0.349	0.349							0.000					
13-Oct-99	0.00	0.344	0.344							0.000					
14-Oct-99	0.00	0.346	0.346							0.000					
15-Oct-99	0.00	0.337	0.337							0.000					
16-Oct-99	0.00	0.341	0.341							0.000					
17-Oct-99	0.00	0.388	0.388							0.000					
18-Oct-99	0.00	0.348	0.348							0.000					
19-Oct-99	0.00	0.359	0.359							0.000					
20-Oct-99	0.00	0.324	0.324							0.000					
21-Oct-99	0.00	0.364	0.364							0.000					

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

Summary of Daily WWTF Influent and Precipitation
May 2002 through April 2003

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
22-Oct-99	0.00	0.322	0.322							0.000					
23-Oct-99	0.00	0.366	0.366							0.000					
24-Oct-99	0.00	0.398	0.398							0.010					
25-Oct-99	0.08	0.432	0.432							0.044					
26-Oct-99	0.08	0.370	0.370							0.000					
27-Oct-99	1.19	0.936	0.936							0.548					
28-Oct-99	1.20	0.678	0.678							0.290					
29-Oct-99	0.08	0.324	0.324							0.000					
30-Oct-99	0.00	0.416	0.416							0.028					
31-Oct-99	0.22	0.438	0.438				3.13	12.20	0.39	0.050				0.122	0.080
1-Nov-99	0.00	0.376								0.000					
2-Nov-99	0.00	0.381								0.000					
3-Nov-99	0.01	0.386								0.000					
4-Nov-99	0.07	0.371								0.000					
5-Nov-99	0.36	1.046								0.658					
6-Nov-99	0.00	0.572								0.184					
7-Nov-99	0.50	0.505								0.117					
8-Nov-99	0.50	0.689								0.301					
9-Nov-99	0.42	0.749								0.361					
10-Nov-99	1.08	1.146								0.758					
11-Nov-99	0.77	0.974								0.586					
12-Nov-99	0.61	0.791								0.403					
13-Nov-99	0.00	0.539								0.151					
14-Nov-99	0.00	0.493								0.105					
15-Nov-99	0.18	0.419								0.031					
16-Nov-99	0.26	0.602								0.214					
17-Nov-99	0.06	0.461								0.073					
18-Nov-99	0.02	0.432								0.044					
19-Nov-99	0.44	0.780								0.392					
20-Nov-99	0.00	0.729								0.341					
21-Nov-99	0.00	0.658								0.270					
22-Nov-99	0.59	0.887								0.499					
23-Nov-99	0.30	0.797								0.409					
24-Nov-99	0.72	0.794								0.406					
25-Nov-99	1.10	3.814								3.426					
26-Nov-99	1.09	1.529								1.141					
27-Nov-99	0.00	0.829								0.441					
28-Nov-99	0.00	0.681								0.293					
29-Nov-99	0.11	0.646								0.258					
30-Nov-99	0.23	0.635					9.42	23.71	0.79	0.247				0.092	0.070
1-Dec-99	0.13	1.183								0.795					
2-Dec-99	1.17	1.527								1.139					
3-Dec-99	0.03	1.397								1.009					
4-Dec-99	1.03	1.505								1.117					
5-Dec-99	0.00	0.792								0.404					
6-Dec-99	0.00	1.736								1.348					
7-Dec-99	0.84	1.543								1.155					
8-Dec-99	0.18	1.051								0.663					
9-Dec-99	0.23	0.981								0.593					
10-Dec-99	0.09	0.739								0.351					
11-Dec-99	0.00	0.633								0.245					
12-Dec-99	0.41	1.076								0.688					
13-Dec-99	0.41	1.969								1.581					
14-Dec-99	1.41	3.223								2.835					
15-Dec-99	0.74	2.310								1.922					
16-Dec-99	0.61	2.127								1.739					
17-Dec-99	0.56	1.847								1.459					
18-Dec-99	0.00	1.177								0.789					

CITY OF INDEPENDENCE, OREGON
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Summary of Daily WWTF Influent and Precipitation
May 2002 through April 2003

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
19-Dec-99	0.04	0.896								0.508					
20-Dec-99	0.00	0.732								0.344					
21-Dec-99	0.00	0.666								0.278					
22-Dec-99	0.00	0.650								0.262					
23-Dec-99	0.00	0.558								0.170					
24-Dec-99	0.00	0.539								0.151					
25-Dec-99	0.00	0.449								0.061					
26-Dec-99	0.00	0.484								0.096					
27-Dec-99	0.00	0.456								0.068					
28-Dec-99	0.00	0.473								0.085					
29-Dec-99	0.00	0.431								0.043					
30-Dec-99	0.00	0.458								0.070					
31-Dec-99	0.00	0.503					7.88	34.11	1.10	0.115				0.103	0.067
1-Jan-00	0.38	0.731		0.731						0.343					
2-Jan-00	0.38	0.943		0.943						0.555					
3-Jan-00	0.39	1.139		1.139						0.751					
4-Jan-00	0.86	1.365		1.365						0.977					
5-Jan-00	0.10	0.784		0.784						0.396					
6-Jan-00	0.08	0.739		0.739						0.351					
7-Jan-00	0.02	0.644		0.644						0.256					
8-Jan-00	0.00	0.682		0.682						0.294					
9-Jan-00	0.44	1.098		1.098						0.710					
10-Jan-00	0.44	1.496		1.496						1.108					
11-Jan-00	0.31	1.799		1.799						1.411					
12-Jan-00	0.85	3.380		3.380						2.992					
13-Jan-00	0.99	2.707		2.707						2.319					
14-Jan-00	0.49	1.901		1.901						1.513					
15-Jan-00	0.00	1.696		1.696						1.308					
16-Jan-00	0.38	1.602		1.602						1.214					
17-Jan-00	0.38	1.096		1.096						0.708					
18-Jan-00	0.00	0.874		0.874						0.486					
19-Jan-00	0.23	1.006		1.006						0.618					
20-Jan-00	0.37	1.164		1.164						0.776					
21-Jan-00	0.44	1.050		1.050						0.662					
22-Jan-00	0.00	0.758		0.758						0.370					
23-Jan-00	0.23	1.144		1.144						0.756					
24-Jan-00	0.23	1.700		1.700						1.312					
25-Jan-00	0.48	1.425		1.425						1.037					
26-Jan-00	0.02	0.886		0.886						0.498					
27-Jan-00	0.00	0.783		0.783						0.395					
28-Jan-00	0.00	0.688		0.688						0.300					
29-Jan-00	0.00	0.651		0.651						0.263					
30-Jan-00	0.02	0.666		0.666						0.278					
31-Jan-00	1.27	1.707		1.707			9.78	38.30	1.24	1.319				0.148	0.156
1-Feb-00	1.23	2.228		2.228						1.840					
2-Feb-00	0.11	1.196		1.196						0.808					
3-Feb-00	0.00	0.961		0.961						0.573					
4-Feb-00	0.02	0.825		0.825						0.437					
5-Feb-00	0.12	0.848		0.848						0.460					
6-Feb-00	0.11	0.752		0.752						0.364					
7-Feb-00	0.00	0.775		0.775						0.387					
8-Feb-00	0.63	1.489		1.489						1.101					
9-Feb-00	0.00	0.877		0.877						0.489					
10-Feb-00	0.00	0.877		0.877						0.489					
11-Feb-00	0.29	1.669		1.669						1.281					
12-Feb-00	0.55	1.962		1.962						1.574					
13-Feb-00	0.55	2.292		2.292						1.904					
14-Feb-00	0.56	2.663		2.663						2.275					

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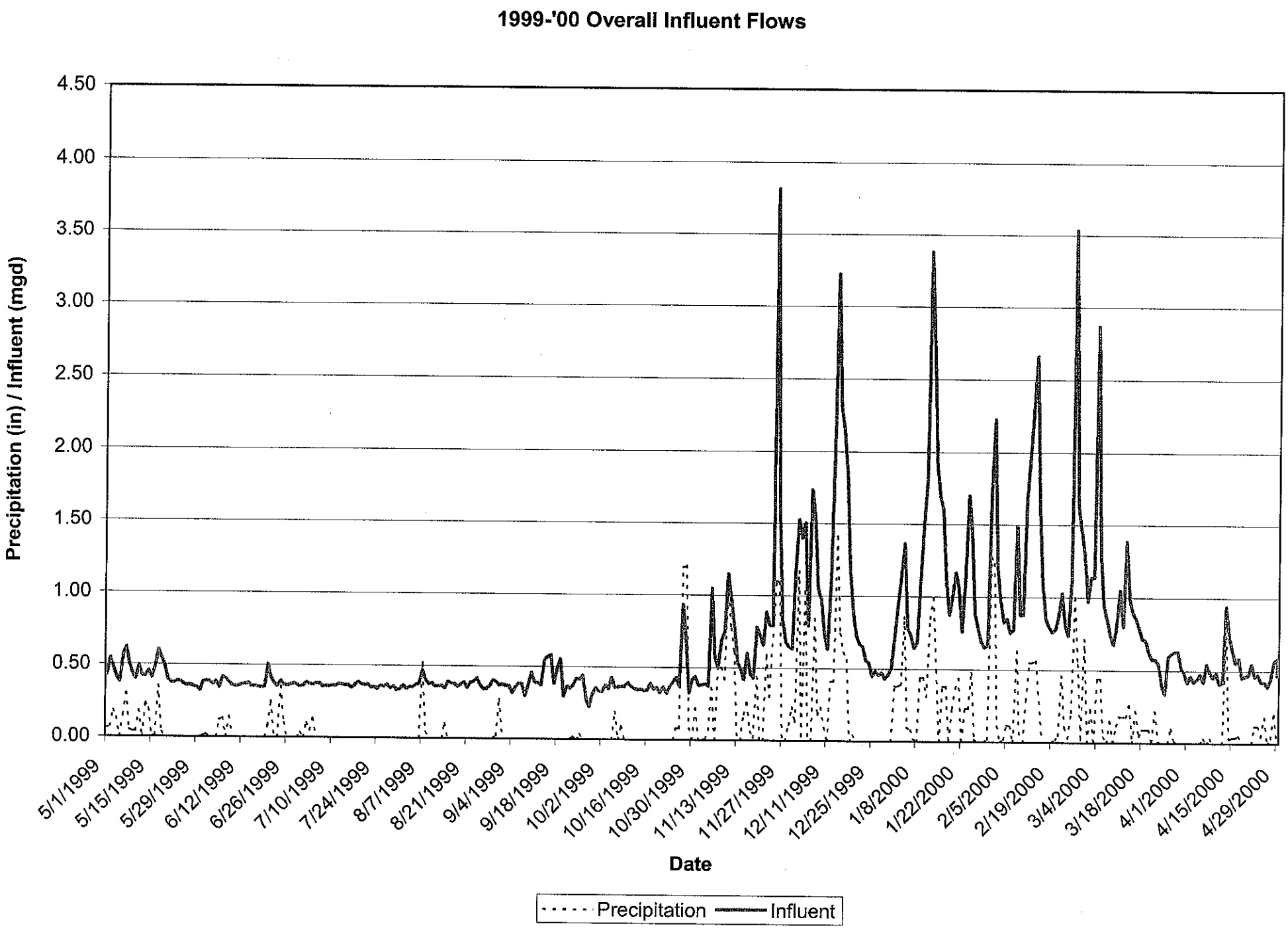
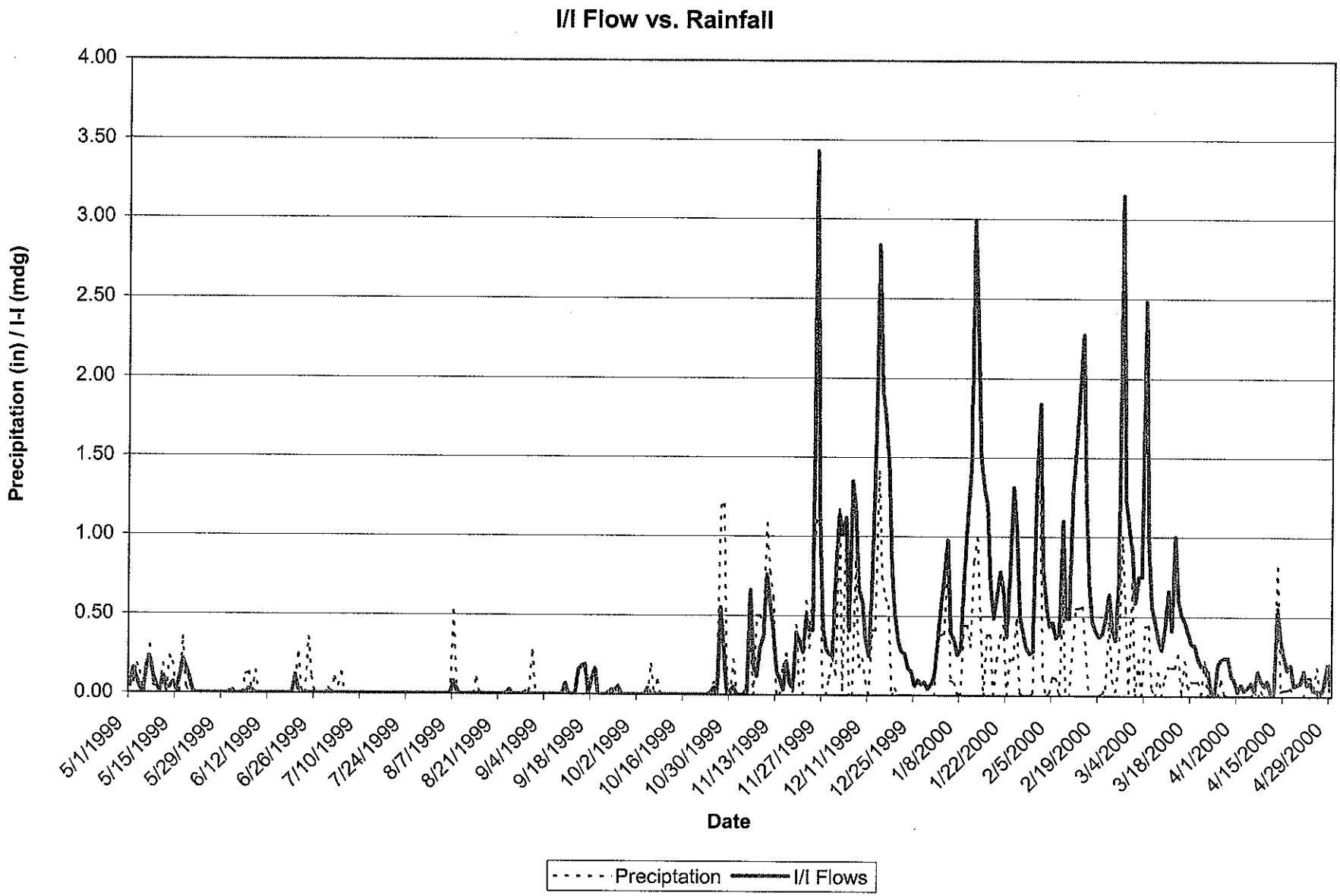
15-Feb-00	0.28	1.621		1.621						1.233					
16-Feb-00	0.00	1.085		1.085						0.697					
17-Feb-00	0.00	0.853		0.853						0.465					
18-Feb-00	0.00	0.797		0.797						0.409					
19-Feb-00	0.00	0.759		0.759						0.371					
20-Feb-00	0.02	0.777		0.777						0.389					
21-Feb-00	0.05	0.871		0.871						0.483					
22-Feb-00	0.46	1.026		1.026						0.638					
23-Feb-00	0.10	0.809		0.809						0.421					
24-Feb-00	0.03	0.736		0.736						0.348					
25-Feb-00	0.21	1.128		1.128						0.740					
26-Feb-00	1.00	3.537		3.537						3.149					
27-Feb-00	0.54	1.623		1.623						1.235					
28-Feb-00	0.02	1.457		1.457						1.069					
29-Feb-00	0.71	1.293		1.293			7.59	37.79	1.30	0.905				0.135	0.149
1-Mar-00	0.00	0.972		0.972						0.584					
2-Mar-00	0.23	1.134		1.134						0.746					
3-Mar-00	0.00	1.136		1.136						0.748					
4-Mar-00	0.44	2.869		2.869						2.481					
5-Mar-00	0.44	1.302		1.302						0.914					
6-Mar-00	0.04	0.950		0.950						0.562					
7-Mar-00	0.00	0.849		0.849						0.461					
8-Mar-00	0.15	0.741		0.741						0.353					
9-Mar-00	0.00	0.676		0.676						0.288					
10-Mar-00	0.12	0.811		0.811						0.423					
11-Mar-00	0.18	1.047		1.047						0.659					
12-Mar-00	0.18	0.800		0.800						0.412					
13-Mar-00	0.18	1.387		1.387						0.999					
14-Mar-00	0.26	0.993		0.993						0.605					
15-Mar-00	0.00	0.898		0.898						0.510					
16-Mar-00	0.22	0.856		0.856						0.468					
17-Mar-00	0.05	0.785		0.785						0.397					
18-Mar-00	0.09	0.713		0.713						0.325					
19-Mar-00	0.09	0.705		0.705						0.317					
20-Mar-00	0.09	0.623		0.623						0.235					
21-Mar-00	0.01	0.578		0.578						0.190					
22-Mar-00	0.22	0.574		0.574						0.186					
23-Mar-00	0.01	0.543		0.543						0.155					
24-Mar-00	0.00	0.400		0.400						0.012					
25-Mar-00	0.00	0.338		0.338						0.000					
26-Mar-00	0.00	0.590		0.590						0.202					
27-Mar-00	0.10	0.616		0.616						0.228					
28-Mar-00	0.01	0.629		0.629						0.241					
29-Mar-00	0.00	0.629		0.629						0.241					
30-Mar-00	0.00	0.517		0.517						0.129					
31-Mar-00	0.00	0.486		0.486		0.486	3.11	26.15	0.84	0.098				0.161	0.166
1-Apr-00	0.00	0.415		0.415		0.415				0.027					
2-Apr-00	0.00	0.460		0.460		0.460				0.072					
3-Apr-00	0.00	0.421		0.421		0.421				0.033					
4-Apr-00	0.00	0.440		0.440		0.440				0.052					
5-Apr-00	0.00	0.473		0.473		0.473				0.085					
6-Apr-00	0.03	0.420		0.420		N/A				0.032	1.1				
7-Apr-00	0.00	0.543		0.543		0.543				0.155					
8-Apr-00	0.03	0.487		0.487		N/A				0.099	3.3				
9-Apr-00	0.00	0.450		0.450		0.450				0.062					
10-Apr-00	0.00	0.484		0.484		0.484				0.096					
11-Apr-00	0.00	0.406		0.406		0.406				0.018					
12-Apr-00	0.00	0.419		0.419		0.419				0.031					

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

Summary of Daily WWTF Influent and Precipitation
May 2002 through April 2003

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
13-Apr-00	0.81	0.941		0.941		N/A				0.553	0.7				
14-Apr-00	0.03	0.731		0.731		N/A				0.343	11.4	1.1			
15-Apr-00	0.04	0.636		0.636		N/A				0.248	6.2	8.5	1.3		
16-Apr-00	0.04	0.551		0.551		N/A				0.163	4.1	5.1	6.9		
17-Apr-00	0.05	0.585		0.585		N/A				0.197	3.9	4.0	4.7		
18-Apr-00	0.00	0.452		0.452		0.452				0.064					
19-Apr-00	0.00	0.463		0.463		0.463				0.075					
20-Apr-00	0.00	0.470		0.470		0.470				0.082					
21-Apr-00	0.00	0.546		0.546		0.546				0.158					
22-Apr-00	0.12	0.459		0.459		N/A				0.071	0.6				
23-Apr-00	0.12	0.474		0.474		N/A				0.086	0.7	0.7			
24-Apr-00	0.05	0.424		0.424		N/A				0.036	0.7	0.7	0.7		
25-Apr-00	0.18	0.421		0.421		N/A				0.033	0.2	0.3	0.4		
26-Apr-00	0.00	0.389		0.389		0.389				0.001					
27-Apr-00	0.04	0.448		0.448		N/A				0.060	1.5				
28-Apr-00	0.20	0.564		0.564		N/A				0.176	0.9	1.0			
29-Apr-00	0.00	0.586		0.586		0.586				0.198					
29-Apr-00	0.00	0.467		0.467		0.467	1.74	15.03	0.50	0.079				0.145	0.197
Total	**47.17**	**246.41**	**71.33**	**117.26**	**33.90**	**14.08**	47.17	246.41	**n/a**	**108.704**					
Mean	**0.13**	**0.67**	**0.39**	**0.97**	**0.37**	**0.43**	**n/a**	**n/a**	0.67	**0.30**				**0.116**	**0.099**
Maximum	**1.41**	**3.81**	**0.94**	**3.54**	**0.51**	**0.59**	**9.78**	**38.30**	**1.30**	**3.43**				**0.161**	**0.197**
										Total April and May I/I (mgd/in)	**61.4**	**31.4**	**14.4**		
										Avg. WW I/I (mgd/in)	**2.1**	**1.7**	**2.4**		


1999-'00 Overall Influent Flows
Precipitation (in) / Influent (mgd)
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
5/1/1999
5/15/1999
5/29/1999
6/12/1999
6/26/1999
7/10/1999
7/24/1999
8/7/1999
8/21/1999
9/4/1999
9/18/1999
10/2/1999
10/16/1999
10/30/1999
11/13/1999
11/27/1999
12/11/1999
12/25/1999
1/8/2000
1/22/2000
2/5/2000
2/19/2000
3/4/2000
3/18/2000
4/1/2000
4/15/2000
4/29/2000
Date
Precipitation
Influent


I/I Flow vs. Rainfall
Precipitation (in) / I-I (mdg)
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
5/1/1999
5/15/1999
5/29/1999
6/12/1999
6/26/1999
7/10/1999
7/24/1999
8/7/1999
8/21/1999
9/4/1999
9/18/1999
10/2/1999
10/16/1999
10/30/1999
11/13/1999
11/27/1999
12/11/1999
12/25/1999
1/8/2000
1/22/2000
2/5/2000
2/19/2000
3/4/2000
3/18/2000
4/1/2000
4/15/2000
4/29/2000
Date
Preciptation
I/I Flows

CITY OF INDEPENDENCE, OREGON

SANITARY SEWER MASTERPLAN

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Summary of WWTF Influent, Effluent and Performance

May 1998 through April 1999

PRIOR TO SEWAGE IMPROVEMENTS FOR COMPARISON ONLY

1998 Population (Est)	**5571**
1999 Population (Est)	**5803**
Average (Est) =	***5687***

OVERALL YEAR FLOW AND LOADS

Parameter	Units	Year Value	Per Capita (gpcpd)
Average Daily Infiltration	mgd	0.1	
Average Daily Exfiltration	mgd	0.1	
BOD5 Loading	lbs/day	602	
Avg. Daily Domesitc Flow (ADF)	mgd	0.48	85
Max Monthly Dry Weather Flow (MMDWF)	mgd	0.86	151
Max Monthly Wet Weather Flow (MMWWF)	mgd	1.96	345
Peak Wet Weather Hydraulic Flow (WWPIF)	mgd	8.82	1550

		Data May '03 - Ap' 04 Flows (mgd)	(gpcpd)	Comments
Avg. Dry Weather Daily Q (May - Oct)	**ADWF**	0.48	85	Average Dry Weather Flow
Peak Dry Weather Q (May - Oct)	**PDWF**	2.57	452	Peak Dry Weather Flow
Avg. Daily Wet Weather Q (Jan - April)	**AWWF**	1.27	223	Average Daily Q during the Winter Months
Peak Wet Weather Q (Jan - April)	**PWWF**	5.99	1053	Peak Wet Weather Flow
Average Daily Q (May-Ap)	**AADF**	0.90	157	Average Annual Daily Flow
Peak Daily Annual Q (May - Ap)	**PDAF**	5.99	1053	Maximum Day Q during the Year - **NOT** 5-yr PDAF
Peak Daily I/I Flow (May - Ap)		5.51		Peak Daily Flow after ADWF is Subtracted
Max. Mo. Dry Weather Q (May-Oct)	**MMDWF**	0.86	151	MMDWF invariably occurs in May
Max. Mo. Wet Weather Q (Nov - Ap)	**MMWWF**	1.96	345	MMWWF invariably occurs in January
Peak Instantaneous Flow	**PIF**	8.82	1550	*6122 gpm* (ADWF *3.0) + Ap/May I/I Correlation *5-Yr 24 Hr Storm + Avg Daily Infiltration
Avg. BOD5 Loading Per Day (lbs/day)		602		
Avg. TSS Loading Per Day (lbs/day)		619		
Diurnal Peaking Factor		3.0	n/a	
5-YR 24 HR DESIGN STORM (in)		3.5	n/a	NOAA Atlas 2, Volume X, Figure 26
Avg. Daily Infiltration (mdg)		0.1	n/a	ADF during High Groundwater (Ap/May) minus ADF no Rain (June-Aug)
Exist. Yearly I/I CORR. (mgd/in rainfall)		2.14	n/a	Sum of Yearly Daily Influent - Daily ADWF / Total Year Rainfall
Exist. May and April I/I CORR. (mgd/in rainfall)		2.08	n/a	Avg. (Sum of April and May Daily Influent - Daily ADWF / April and May Rainfall)

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1-May-98	0.00	0.498	0.498			0.498				0.014					
2-May-98	0.37	0.520	0.520			N/A				0.036	0.1				
3-May-98	0.00	0.496	0.496			0.496				0.012					
4-May-98	0.00	0.462	0.462			0.462				0.000					
5-May-98	0.00	0.474	0.474			0.474				0.000					
6-May-98	0.00	0.409	0.409			0.409				0.000					
7-May-98	0.10	0.429	0.429			N/A				0.000	0.0				
8-May-98	0.01	0.678	0.678			N/A				0.194	19.4	1.8			
9-May-98	0.00	0.459	0.459			0.459				0.000			1.8		
10-May-98	0.00	0.483	0.483			0.483				0.000					
11-May-98	0.00	0.436	0.436			0.436				0.000					
12-May-98	0.22	0.820	0.820			N/A				0.336	1.5				
13-May-98	0.19	0.813	0.813			N/A				0.329	1.7	1.6			
14-May-98	0.20	0.804	0.804			N/A				0.320	1.6	1.7	1.6		
15-May-98	0.16	0.648	0.648			N/A				0.164	1.0	1.3	1.5		
16-May-98	0.47	1.179	1.179			N/A				0.695	1.5	1.4	1.4		
17-May-98	0.58	1.002	1.002			N/A				0.518	0.9	1.2	1.1		
18-May-98	0.00	0.670	0.670			0.670				0.186					
19-May-98	0.71	1.443	1.443			N/A				0.959	1.4				
20-May-98	0.40	2.572	2.572			N/A				2.088	5.2	2.7			
21-May-98	1.23	2.106	2.106			N/A				1.622	1.3	2.3	2.0		
22-May-98	0.00	1.018	1.018			1.018				0.534					
23-May-98	0.22	0.799	0.799			N/A				0.315	1.4				
24-May-98	0.33	1.158	1.158			N/A				0.674	2.0	1.8			
25-May-98	0.23	1.186	1.186			N/A				0.702	3.1	2.5	2.2		
26-May-98	0.04	0.928	0.928			N/A				0.444	11.1	4.2	3.0		
27-May-98	0.00	0.742	0.742			0.742				0.258					
28-May-98	0.00	0.651	0.651			0.651				0.167					
29-May-98	0.29	1.231	1.231			N/A				0.747	2.6				
30-May-98	0.05	0.804	0.804			N/A				0.320	6.4	3.1			
31-May-98	0.00	0.652	0.652			0.652	5.80	26.57	0.86	0.168				0.223	0.120
1-Jun-98	0.00	0.613	0.613		0.613					0.129					
2-Jun-98	0.00	0.559	0.559		0.559					0.075					
3-Jun-98	0.00	0.502	0.502		0.502					0.018					
4-Jun-98	0.00	0.486	0.486		0.486					0.002					
5-Jun-98	0.00	0.465	0.465		0.465					0.000					
6-Jun-98	0.00	0.475	0.475		0.475					0.000					
7-Jun-98	0.00	0.517	0.517		0.517					0.033					
8-Jun-98	0.00	0.432	0.432		0.432					0.000					
9-Jun-98	0.00	0.511	0.511		0.511					0.027					
10-Jun-98	0.26	0.804	0.804		0.804					0.320					
11-Jun-98	0.00	0.526	0.526		0.526					0.042					
12-Jun-98	0.00	0.432	0.432		0.432					0.000					
13-Jun-98	0.00	0.459	0.459		0.459					0.000					
14-Jun-98	0.00	0.423	0.423		0.423					0.000					
15-Jun-98	0.00	0.418	0.418		0.418					0.000					
16-Jun-98	0.00	0.385	0.385		0.385					0.000					
17-Jun-98	0.00	0.405	0.405		0.405					0.000					
18-Jun-98	0.00	0.426	0.426		0.426					0.000					
19-Jun-98	0.00	0.353	0.353		0.353					0.000					
20-Jun-98	0.00	0.405	0.405		0.405					0.000					
21-Jun-98	0.00	0.417	0.417		0.417					0.000					
22-Jun-98	0.00	0.410	0.410		0.410					0.000					
23-Jun-98	0.00	0.437	0.437		0.437					0.000					
24-Jun-98	0.50	0.720	0.720		0.720					0.236					
25-Jun-98	0.01	0.447	0.447		0.447					0.000					
26-Jun-98	0.06	0.434	0.434		0.434					0.000					
27-Jun-98	0.00	0.381	0.381		0.381					0.000					

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28-Jun-98	0.00	0.438	0.438		0.438					0.000					
29-Jun-98	0.00	0.389	0.389		0.389					0.000					
30-Jun-98	0.00	0.420	0.420		0.420		0.83	14.09	0.47	0.000				0.153	0.098
1-Jul-98	0.03	0.408	0.408		0.408					0.000					
2-Jul-98	0.00	0.420	0.420		0.420					0.000					
3-Jul-98	0.00	0.377	0.377		0.377					0.000					
4-Jul-98	0.00	0.425	0.425		0.425					0.000					
5-Jul-98	0.00	0.425	0.425		0.425					0.000					
6-Jul-98	0.00	0.413	0.413		0.413					0.000					
7-Jul-98	0.00	0.437	0.437		0.437					0.000					
8-Jul-98	0.00	0.404	0.404		0.404					0.000					
9-Jul-98	0.00	0.425	0.425		0.425					0.000					
10-Jul-98	0.00	0.401	0.401		0.401					0.000					
11-Jul-98	0.00	0.408	0.408		0.408					0.000					
12-Jul-98	0.00	0.384	0.384		0.384					0.000					
13-Jul-98	0.00	0.408	0.408		0.408					0.000					
14-Jul-98	0.00	0.404	0.404		0.404					0.000					
15-Jul-98	0.00	0.399	0.399		0.399					0.000					
16-Jul-98	0.00	0.432	0.432		0.432					0.000					
17-Jul-98	0.00	0.384	0.384		0.384					0.000					
18-Jul-98	0.00	0.375	0.375		0.375					0.000					
19-Jul-98	0.00	0.399	0.399		0.399					0.000					
20-Jul-98	0.00	0.396	0.396		0.396					0.000					
21-Jul-98	0.00	0.395	0.395		0.395					0.000					
22-Jul-98	0.00	0.379	0.379		0.379					0.000					
23-Jul-98	0.00	0.363	0.363		0.363					0.000					
24-Jul-98	0.00	0.408	0.408		0.408					0.000					
25-Jul-98	0.00	0.368	0.368		0.368					0.000					
26-Jul-98	0.00	0.389	0.389		0.389					0.000					
27-Jul-98	0.00	0.413	0.413		0.413					0.000					
28-Jul-98	0.00	0.422	0.422		0.422					0.000					
29-Jul-98	0.00	0.389	0.389		0.389					0.000					
30-Jul-98	0.06	0.440	0.440		0.440					0.000					
31-Jul-98	0.00	0.363	0.363		0.363		0.09	12.45	0.40	0.000				0.148	0.109
1-Aug-98	0.00	0.368	0.368		0.368					0.000					
2-Aug-98	0.00	0.389	0.389		0.389					0.000					
3-Aug-98	0.00	0.420	0.420		0.420					0.000					
4-Aug-98	0.00	0.411	0.411		0.411					0.000					
5-Aug-98	0.00	0.408	0.408		0.408					0.000					
6-Aug-98	0.00	0.387	0.387		0.387					0.000					
7-Aug-98	0.00	0.372	0.372		0.372					0.000					
8-Aug-98	0.00	0.393	0.393		0.393					0.000					
9-Aug-98	0.00	0.335	0.335		0.335					0.000					
10-Aug-98	0.00	0.356	0.356		0.356					0.000					
11-Aug-98	0.00	0.372	0.372		0.372					0.000					
12-Aug-98	0.00	0.486	0.486		0.486					0.002					
13-Aug-98	0.00	0.486	0.486		0.486					0.002					
14-Aug-98	0.00	0.426	0.426		0.426					0.000					
15-Aug-98	0.00	0.435	0.435		0.435					0.000					
16-Aug-98	0.00	0.465	0.465		0.465					0.000					
17-Aug-98	0.00	0.411	0.411		0.411					0.000					
18-Aug-98	0.00	0.368	0.368		0.368					0.000					
19-Aug-98	0.00	0.360	0.360		0.360					0.000					
20-Aug-98	0.00	0.351	0.351		0.351					0.000					
21-Aug-98	0.00	0.342	0.342		0.342					0.000					
22-Aug-98	0.00	0.356	0.356		0.356					0.000					
23-Aug-98	0.00	0.339	0.339		0.339					0.000					
24-Aug-98	0.00	0.363	0.363		0.363					0.000					

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25-Aug-98	0.00	0.371	0.371		0.371					0.000					
26-Aug-98	0.00	0.363	0.363		0.363					0.000					
27-Aug-98	0.00	0.359	0.359		0.359					0.000					
28-Aug-98	0.00	0.333	0.333		0.333					0.000					
29-Aug-98	0.00	0.347	0.347		0.347					0.000					
30-Aug-98	0.00	0.404	0.404		0.404					0.000					
31-Aug-98	0.00	0.335	0.335		0.335		0.00	11.91	0.38	0.000				0.133	0.118
1-Sep-98	0.00	0.366	0.366							0.000					
2-Sep-98	0.00	0.335	0.335							0.000					
3-Sep-98	0.00	0.342	0.342							0.000					
4-Sep-98	0.00	0.330	0.330							0.000					
5-Sep-98	0.00	0.335	0.335							0.000					
6-Sep-98	0.00	0.306	0.306							0.000					
7-Sep-98	0.00	0.320	0.320							0.000					
8-Sep-98	0.00	0.314	0.314							0.000					
9-Sep-98	0.00	0.315	0.315							0.000					
10-Sep-98	0.00	0.287	0.287							0.000					
11-Sep-98	0.00	0.335	0.335							0.000					
12-Sep-98	0.00	0.323	0.323							0.000					
13-Sep-98	0.00	0.363	0.363							0.000					
14-Sep-98	0.00	0.320	0.320							0.000					
15-Sep-98	0.00	0.359	0.359							0.000					
16-Sep-98	0.00	0.327	0.327							0.000					
17-Sep-98	0.56	0.354	0.354							0.000					
18-Sep-98	0.04	0.500	0.500							0.016					
19-Sep-98	0.00	0.381	0.381							0.000					
20-Sep-98	0.00	0.372	0.372							0.000					
21-Sep-98	0.00	0.339	0.339							0.000					
22-Sep-98	0.00	0.344	0.344							0.000					
23-Sep-98	0.00	0.363	0.363							0.000					
24-Sep-98	0.00	0.410	0.410							0.000					
25-Sep-98	0.11	0.336	0.336							0.000					
26-Sep-98	0.00	0.356	0.356							0.000					
27-Sep-98	0.00	0.384	0.384							0.000					
28-Sep-98	0.00	0.336	0.336							0.000					
29-Sep-98	0.00	0.344	0.344							0.000					
30-Sep-98	0.00	0.336	0.336				0.71	10.43	0.35	0.000				0.086	0.102
1-Oct-98	0.00	0.336	0.336							0.000					
2-Oct-98	0.35	0.438	0.438							0.000					
3-Oct-98	0.06	0.369	0.369							0.000					
4-Oct-98	0.15	0.398	0.398							0.000					
5-Oct-98	0.00	0.353	0.353							0.000					
6-Oct-98	0.00	0.324	0.324							0.000					
7-Oct-98	0.00	0.312	0.312							0.000					
8-Oct-98	0.04	0.303	0.303							0.000					
9-Oct-98	0.98	0.569	0.569							0.085					
10-Oct-98	0.00	0.402	0.402							0.000					
11-Oct-98	0.00	0.426	0.426							0.000					
12-Oct-98	0.24	0.737	0.737							0.253					
13-Oct-98	0.49	0.477	0.477							0.000					
14-Oct-98	0.12	0.431	0.431							0.000					
15-Oct-98	0.15	0.408	0.408							0.000					
16-Oct-98	0.00	0.554	0.554							0.070					
17-Oct-98	0.00	0.473	0.473							0.000					
18-Oct-98	0.01	0.465	0.465							0.000					
19-Oct-98	0.00	0.453	0.453							0.000					
20-Oct-98	0.00	0.425	0.425							0.000					
21-Oct-98	0.00	0.441	0.441							0.000					

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22-Oct-98	0.00	0.416	0.416							0.000					
23-Oct-98	0.02	0.432	0.432							0.000					
24-Oct-98	0.02	0.429	0.429							0.000					
25-Oct-98	0.00	0.407	0.407							0.000					
26-Oct-98	0.00	0.396	0.396							0.000					
27-Oct-98	0.19	0.608	0.608							0.124					
28-Oct-98	0.08	0.462	0.462							0.000					
29-Oct-98	0.02	0.414	0.414							0.000					
30-Oct-98	0.00	0.407	0.407							0.000					
31-Oct-98	0.06	0.465	0.465				2.98	13.53	0.44	0.000				0.102	0.115
1-Nov-98	0.08	0.519								0.035					
2-Nov-98	0.14	0.434								0.000					
3-Nov-98	0.19	0.519								0.035					
4-Nov-98	0.23	0.984								0.500					
5-Nov-98	0.32	0.704								0.220					
6-Nov-98	0.35	0.686								0.202					
7-Nov-98	0.27	0.549								0.065					
8-Nov-98	0.00	0.599								0.115					
9-Nov-98	0.10	0.432								0.000					
10-Nov-98	0.42	0.626								0.142					
11-Nov-98	0.00	0.552								0.068					
12-Nov-98	0.00	0.524								0.040					
13-Nov-98	0.00	0.477								0.000					
14-Nov-98	0.00	0.396								0.000					
15-Nov-98	0.41	0.503								0.019					
16-Nov-98	0.41	0.554								0.070					
17-Nov-98	0.00	0.576								0.092					
18-Nov-98	0.18	0.608								0.124					
19-Nov-98	0.25	0.584								0.100					
20-Nov-98	2.05	2.513								2.029					
21-Nov-98	1.14	1.820								1.336					
22-Nov-98	0.70	3.389								2.905					
23-Nov-98	0.81	2.075								1.591					
24-Nov-98	0.48	1.584								1.100					
25-Nov-98	2.57	3.861								3.377					
26-Nov-98	1.71	2.405								1.921					
27-Nov-98	0.12	2.276								1.792					
28-Nov-98	0.40	1.149								0.665					
29-Nov-98	0.78	2.223								1.739					
30-Nov-98	0.95	3.312					15.06	37.43	1.25	2.828				0.049	0.089
1-Dec-98	1.25	3.358								2.874					
2-Dec-98	1.52	2.419								1.935					
3-Dec-98	0.12	1.415								0.931					
4-Dec-98	0.35	1.112								0.628					
5-Dec-98	0.63	2.057								1.573					
6-Dec-98	0.98	1.448								0.964					
7-Dec-98	0.57	1.926								1.442					
8-Dec-98	0.36	1.451								0.967					
9-Dec-98	0.00	1.491								1.007					
10-Dec-98	0.06	0.801								0.317					
11-Dec-98	0.72	1.026								0.542					
12-Dec-98	0.33	1.005								0.521					
13-Dec-98	0.23	0.716								0.232					
14-Dec-98	0.00	0.693								0.209					
15-Dec-98	0.00	0.693								0.209					
16-Dec-98	0.00	0.603								0.119					
17-Dec-98	0.00	0.657								0.173					
18-Dec-98	0.03	0.384								0.000					

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19-Dec-98	0.00	0.402								0.000					
20-Dec-98	0.00	0.359								0.000					
21-Dec-98	0.03	0.336								0.000					
22-Dec-98	0.00	0.402								0.000					
23-Dec-98	0.00	0.321								0.000					
24-Dec-98	0.21	0.543								0.059					
25-Dec-98	0.20	0.918								0.434					
26-Dec-98	0.15	0.779								0.295					
27-Dec-98	2.25	3.960								3.476					
28-Dec-98	2.68	4.731								4.247					
29-Dec-98	0.40	4.789								4.305					
30-Dec-98	0.04	4.244								3.760					
31-Dec-98	0.32	3.450					13.43	48.49	1.56	2.966				0.095	0.129
1-Jan-99	0.00	0.726		0.726						0.242					
2-Jan-99	0.00	0.304		0.304						0.000					
3-Jan-99	0.00	0.332		0.332						0.000					
4-Jan-99	0.00	0.583		0.583						0.099					
5-Jan-99	0.00	0.641		0.641						0.157					
6-Jan-99	0.04	0.546		0.546						0.062					
7-Jan-99	0.02	0.512		0.512						0.028					
8-Jan-99	0.00	0.494		0.494						0.010					
9-Jan-99	0.00	0.509		0.509						0.025					
10-Jan-99	0.00	0.510		0.510						0.026					
11-Jan-99	0.33	0.653		0.653						0.169					
12-Jan-99	0.03	0.560		0.560						0.076					
13-Jan-99	0.00	0.523		0.523						0.039					
14-Jan-99	0.52	0.578		0.578						0.094					
15-Jan-99	0.24	1.822		1.822						1.338					
16-Jan-99	0.65	2.075		2.075						1.591					
17-Jan-99	1.88	5.991		5.991						5.507					
18-Jan-99	1.12	3.607		3.607						3.123					
19-Jan-99	0.97	3.164		3.164						2.680					
20-Jan-99	0.68	4.258		4.258						3.774					
21-Jan-99	0.79	2.899		2.899						2.415					
22-Jan-99	0.87	3.977		3.977						3.493					
23-Jan-99	0.00	1.838		1.838						1.354					
24-Jan-99	0.07	1.224		1.224						0.740					
25-Jan-99	0.00	0.981		0.981						0.497					
26-Jan-99	0.00	0.785		0.785						0.301					
27-Jan-99	0.03	1.402		1.402						0.918					
28-Jan-99	1.54	3.494		3.494						3.010					
29-Jan-99	0.48	2.440		2.440						1.956					
30-Jan-99	0.70	2.481		2.481						1.997					
31-Jan-99	0.13	1.471		1.471			11.09	51.38	1.66	0.987				0.049	0.081
1-Feb-99	0.00	1.258		1.258						0.774					
2-Feb-99	1.02	2.509		2.509						2.025					
3-Feb-99	0.05	1.866		1.866						1.382					
4-Feb-99	0.55	2.332		2.332						1.848					
5-Feb-99	0.29	1.702		1.702						1.218					
6-Feb-99	1.33	3.331		3.331						2.847					
7-Feb-99	0.97	2.425		2.425						1.941					
8-Feb-99	0.37	1.871		1.871						1.387					
9-Feb-99	0.17	1.260		1.260						0.776					
10-Feb-99	0.40	1.077		1.077						0.593					
11-Feb-99	0.00	0.869		0.869						0.385					
12-Feb-99	0.00	0.823		0.823						0.339					
13-Feb-99	0.61	0.879		0.879						0.395					
14-Feb-99	0.61	0.721		0.721						0.237					

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

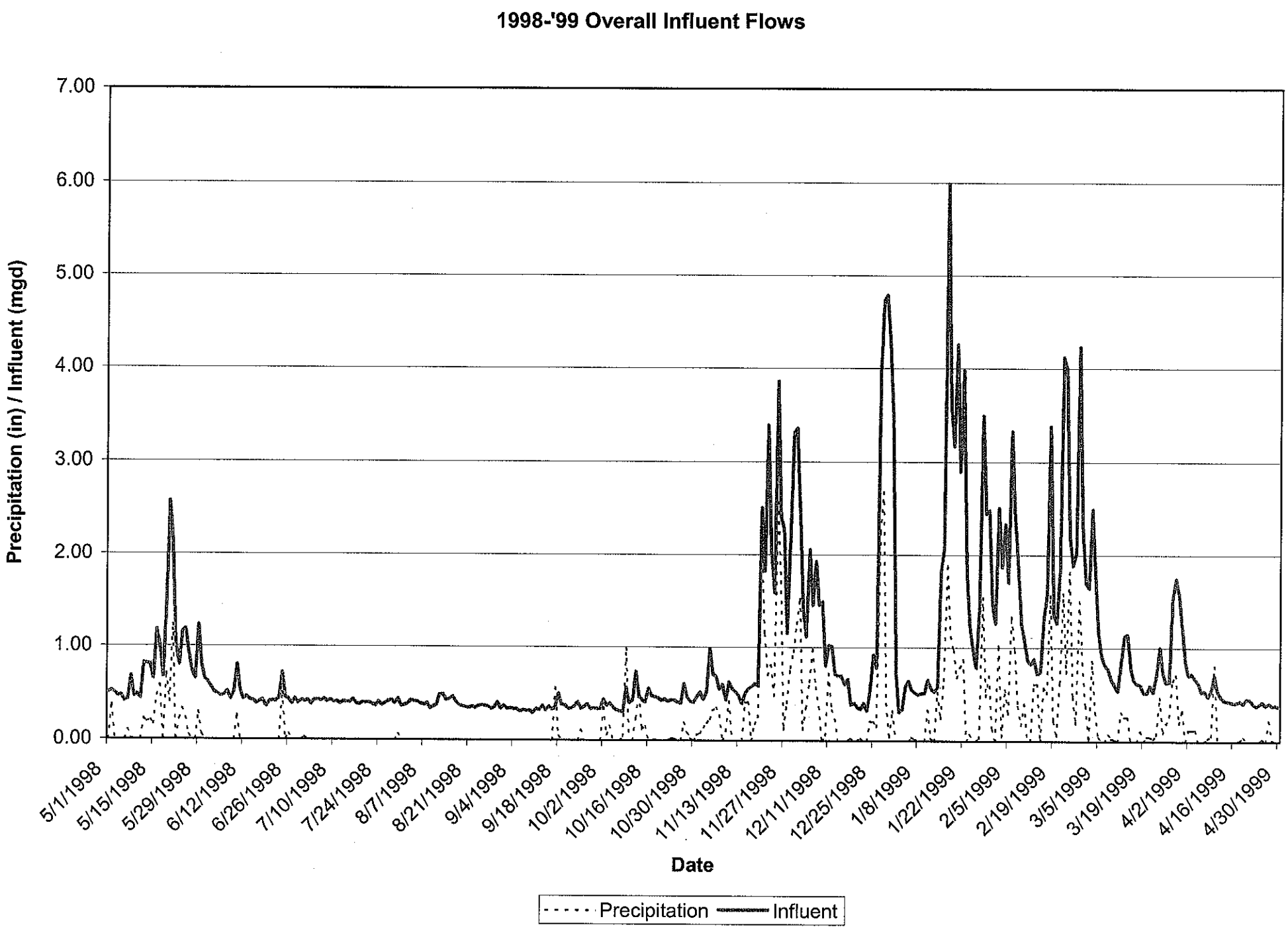
Summary of Daily WWTF Influent and Precipitation
May 1998 through April 1999

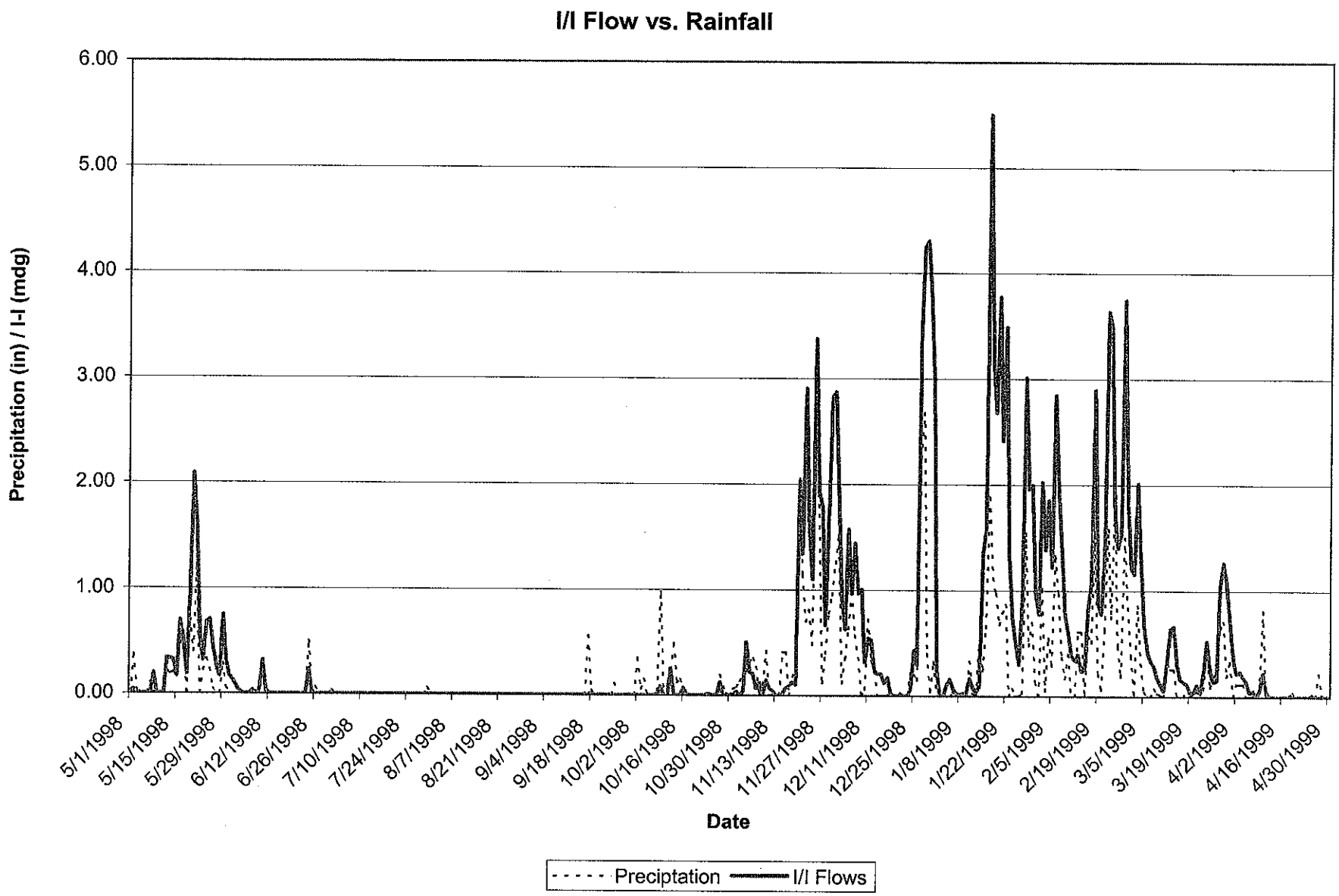
DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
15-Feb-99	0.00	0.736		0.736						0.252					
16-Feb-99	0.57	1.307		1.307						0.823					
17-Feb-99	0.51	1.568		1.568						1.084					
18-Feb-99	1.56	3.380		3.380						2.896					
19-Feb-99	0.21	1.370		1.370						0.886					
20-Feb-99	0.06	1.260		1.260						0.776					
21-Feb-99	0.63	1.827		1.827						1.343					
22-Feb-99	1.58	4.120		4.120						3.636					
23-Feb-99	0.74	3.995		3.995						3.511					
24-Feb-99	1.82	2.209		2.209						1.725					
25-Feb-99	0.47	1.882		1.882						1.398					
26-Feb-99	0.19	2.016		2.016						1.532					
27-Feb-99	1.50	4.230		4.230						3.746					
28-Feb-99	0.84	2.314		2.314						1.830				0.087	0.153
1-Mar-99	0.38	1.704		1.704			17.43	56.84	1.96	1.220					
2-Mar-99	0.02	1.640		1.640						1.156					
3-Mar-99	0.86	2.495		2.495						2.011					
4-Mar-99	0.31	1.769		1.769						1.285					
5-Mar-99	0.04	1.148		1.148						0.664					
6-Mar-99	0.00	0.911		0.911						0.427					
7-Mar-99	0.00	0.816		0.816						0.332					
8-Mar-99	0.07	0.770		0.770						0.286					
9-Mar-99	0.03	0.661		0.661						0.177					
10-Mar-99	0.02	0.595		0.595						0.111					
11-Mar-99	0.00	0.537		0.537						0.053					
12-Mar-99	0.31	0.820		0.820						0.336					
13-Mar-99	0.26	1.124		1.124						0.640					
14-Mar-99	0.26	1.144		1.144						0.660					
15-Mar-99	0.00	0.787		0.787						0.303					
16-Mar-99	0.00	0.648		0.648						0.164					
17-Mar-99	0.00	0.617		0.617						0.133					
18-Mar-99	0.11	0.602		0.602						0.118					
19-Mar-99	0.00	0.520		0.520						0.036					
20-Mar-99	0.05	0.517		0.517						0.033					
21-Mar-99	0.05	0.594		0.594						0.110					
22-Mar-99	0.03	0.528		0.528						0.044					
23-Mar-99	0.07	0.698		0.698						0.214					
24-Mar-99	0.47	1.004		1.004						0.520					
25-Mar-99	0.09	0.729		0.729						0.245					
26-Mar-99	0.19	0.623		0.623						0.139					
27-Mar-99	0.27	0.635		0.635						0.151					
28-Mar-99	0.65	1.530		1.530						1.046					
29-Mar-99	0.71	1.744		1.744						1.260					
30-Mar-99	0.19	1.559		1.559						1.075					
31-Mar-99	0.33	1.199		1.199						0.715					
1-Apr-99	0.00	0.844		0.844		0.844	5.39	29.81	0.96	0.360		3.3	4.1	0.103	0.133
2-Apr-99	0.12	0.701		0.701		N/A				0.217	1.8				
3-Apr-99	0.12	0.722		0.722		N/A				0.238	2.0	1.9			
4-Apr-99	0.12	0.666		0.666		N/A				0.182	1.5	1.8	1.8		
5-Apr-99	0.00	0.623		0.623		0.623				0.139					
6-Apr-99	0.00	0.523		0.523		0.523				0.039					
7-Apr-99	0.00	0.536		0.536		0.536				0.052					
8-Apr-99	0.03	0.477		0.477		N/A				0.000	0.0				
9-Apr-99	0.06	0.538		0.538		N/A				0.054	0.9	0.6			
10-Apr-99	0.81	0.703		0.703		N/A				0.219	0.3	0.3	0.3		
11-Apr-99	0.00	0.538		0.538		0.538				0.054					
12-Apr-99	0.00	0.475		0.475		0.475				0.000					
13-Apr-99	0.00	0.438		0.438		0.438				0.000					

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER MASTERPLAN
DEA Project Number INDP0000-0028

Summary of Daily WWTF Influent and Precipitation
May 1998 through April 1999

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MGD)	ADWF May - Oct. (MGD)	AWWF Jan - April (MGD)	ADF Jun-Aug (MGD)	Infiltration Ap-May (MGD)	TOTAL MO. Rain (IN)	TOTAL MO. INFL (MG)	MO. ADF (MGD)	Inflow - ADWF I/I Comp. (mgd)	One Day In. of Pre. (MGD/inch)	Two Day In. of Pre. (MGD/inch)	Three Day In. of Pre. (MGD/inch)	BODx Mo. Loading (lbs/capita)	TSS Mo. Loading (lbs/capita)
14-Apr-99	0.00	0.429		0.429		0.429				0.000					
15-Apr-99	0.00	0.422		0.422		0.422				0.000					
16-Apr-99	0.00	0.406		0.406		0.406				0.000					
17-Apr-99	0.00	0.416		0.416		0.416				0.000					
18-Apr-99	0.01	0.433		0.433		N/A				0.000	0.0				
19-Apr-99	0.04	0.405		0.405		N/A				0.000	0.0				
20-Apr-99	0.00	0.452		0.452		0.452				0.000					
21-Apr-99	0.00	0.448		0.448		0.448				0.000					
22-Apr-99	0.00	0.408		0.408		0.408				0.000					
23-Apr-99	0.00	0.377		0.377		0.377				0.000					
24-Apr-99	0.00	0.394		0.394		0.394				0.000					
25-Apr-99	0.03	0.421		0.421		N/A				0.000	0.0				
26-Apr-99	0.00	0.383		0.383		0.383				0.000					
27-Apr-99	0.22	0.407		0.407		N/A				0.000	0.0				
28-Apr-99	0.02	0.379		0.379		N/A				0.000	0.0				
29-Apr-99	0.00	0.387		0.387		0.387				0.000					
30-Apr-99	0.00	0.371		0.371		0.371	1.58	13.88	0.46	0.000				0.042	0.060
Total	**74.39**	**326.81**	**88.99**	**151.91**	**38.45**	**16.32**	74.39	326.81	**n/a**	**166.115**					
Mean	**0.20**	**0.90**	**0.48**	**1.27**	**0.42**	**0.51**	**n/a**	**n/a**	0.90	**0.46**				**0.106**	**0.109**
Maximum	**2.68**	**5.99**	**2.57**	**5.99**	**0.80**	**1.02**	**17.43**	**56.84**	**1.96**	**5.51**				**0.223**	**0.153**
										Total April and May I/I (mgd/in)	**68.8**	**33.4**	**20.8**		
										Avg. WW I/I (mgd/in)	**2.4**	**2.0**	**1.9**		


1998-'99 Overall Influent Flows
Precipitation (in) / Influent (mgd)
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
5/1/1998
5/15/1998
5/29/1998
6/12/1998
6/26/1998
7/10/1998
7/24/1998
8/7/1998
8/21/1998
9/4/1998
9/18/1998
10/2/1998
10/16/1998
10/30/1998
11/13/1998
11/27/1998
12/11/1998
12/25/1998
1/8/1999
1/22/1999
2/5/1999
2/19/1999
3/5/1999
3/19/1999
4/2/1999
4/16/1999
4/30/1999
Date
Precipitation
Influent


I/I Flow vs. Rainfall
Precipitation (in) / I-I (mdg)
6.00
5.00
4.00
3.00
2.00
1.00
0.00
5/1/1998
5/15/1998
5/29/1998
6/12/1998
6/26/1998
7/10/1998
7/24/1998
8/7/1998
8/21/1998
9/4/1998
9/18/1998
10/2/1998
10/16/1998
10/30/1998
11/13/1998
11/27/1998
12/11/1998
12/25/1998
1/8/1999
1/22/1999
2/5/1999
2/19/1999
3/5/1999
3/19/1999
4/2/1999
4/16/1999
4/30/1999
Date
Preciptation
I/I Flows

DAVID EVANS AND ASSOCIATES INC.

JN. INOP28

BY JFD DATE 1/15/05

SHEET 1 OF 6 SHEETS

JOB DESCRIPTION INDY MPLAN

CALCULATION FOR DEQ FLOW PROJECTIONS

DEQ GRAPHICAL METHOD →

MMDWF10 = 0.89 MGD

MMWWF5 = 1.50 MGD

PDAF5 = 4.096 = 4.10 MGD

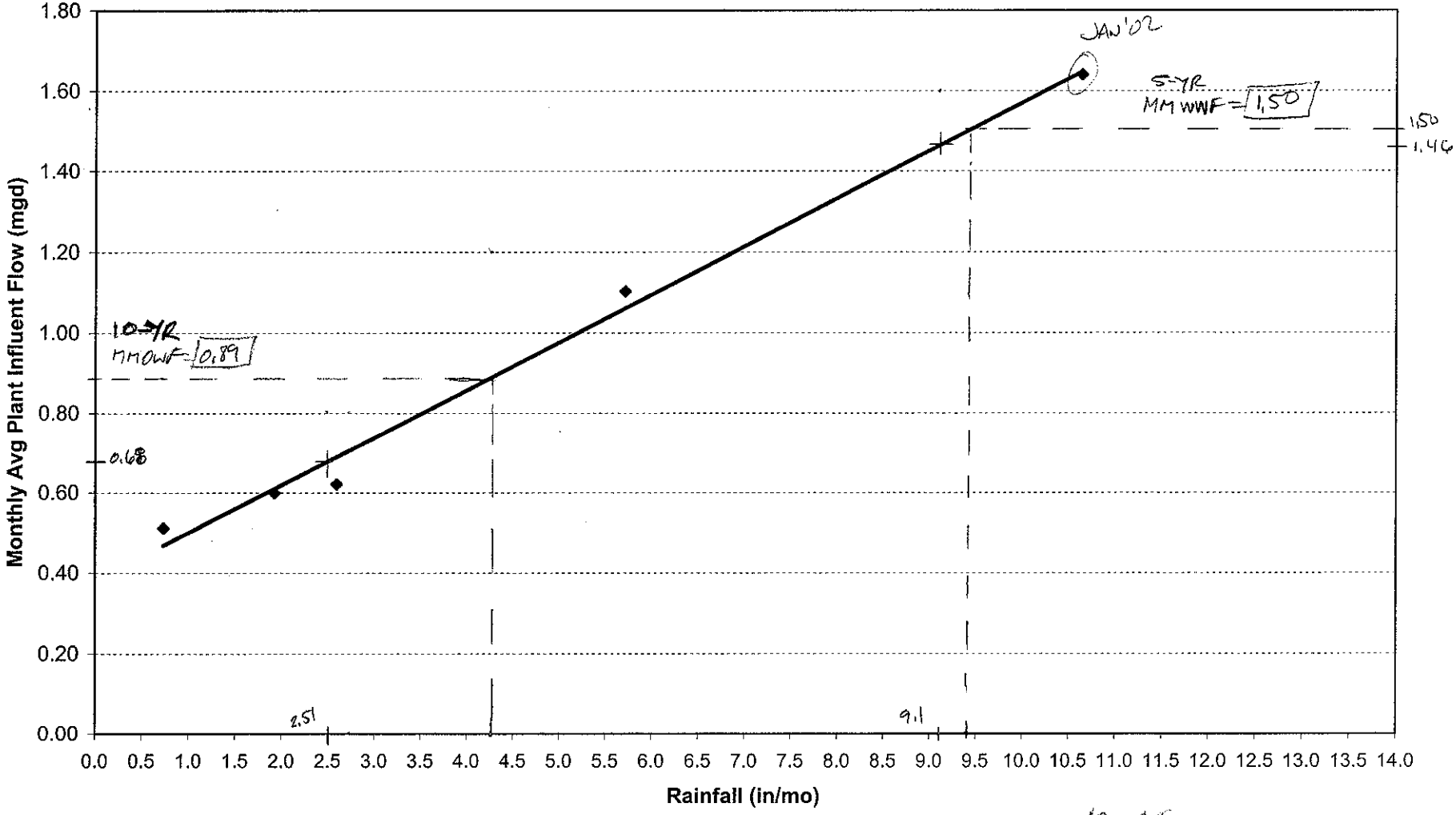
→ LOG GRAPH PIF = 7.6 MGD
AADF = 0.57 MGD

USING 5-YR AVG ACCUM
MMDWF10 = 0.68 MGD
MMWWF5 = 1.46 MGD
PDAF5 = 4.1 MGD
→ LOG GRAPH PIF = 7.6 MGD
AADF = 0.54 MGD

JAN. '02 - USED SO LIN. REGRESSION ISN'T EXTENDED BEYOND DATA LIMITS

3/6

DEQ Graph #1
Avg Plant Flow vs. Winter Rainfall
Ap '03 - Ap '04

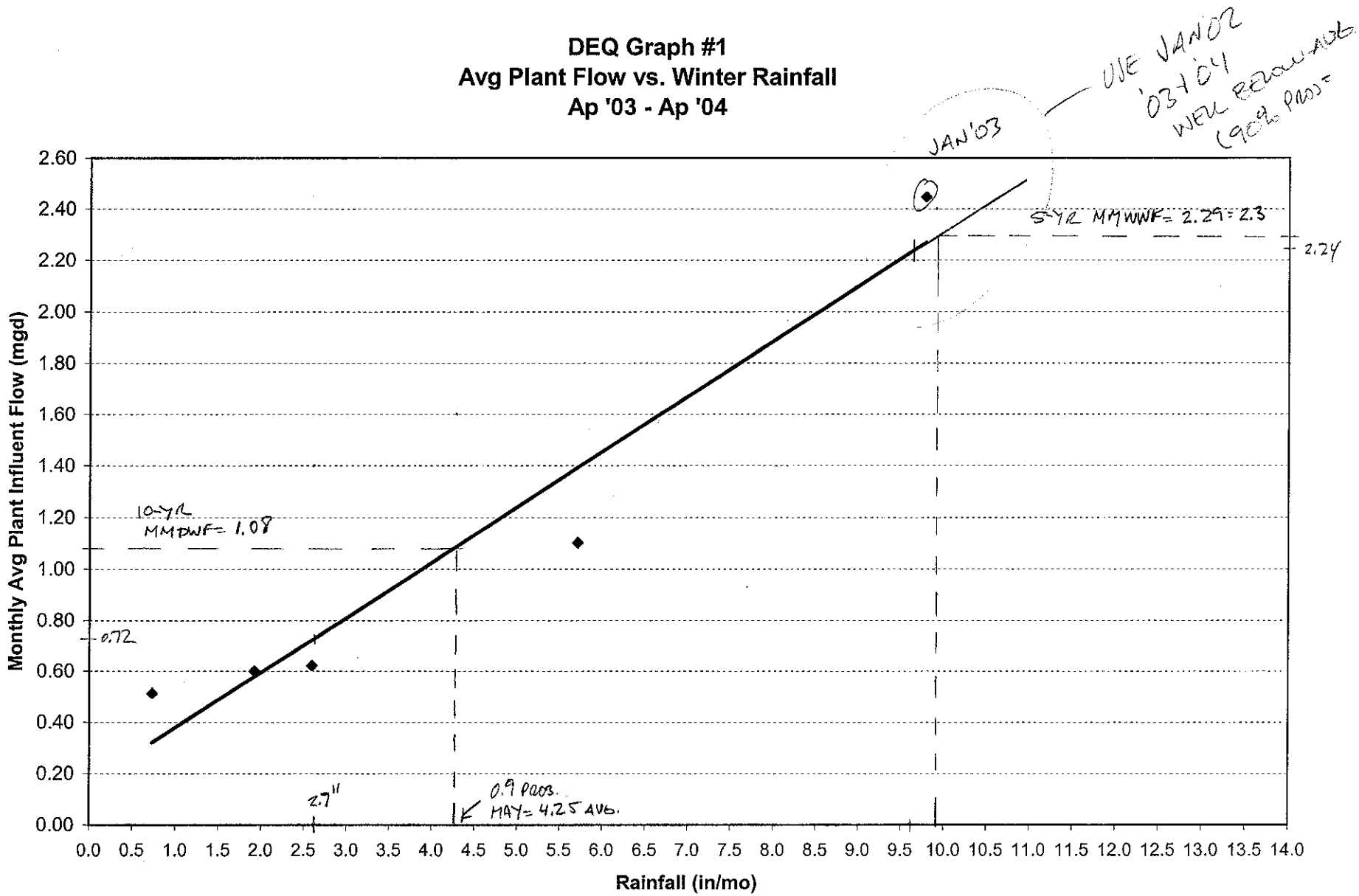


	DATA	20 AVG	
MAY	2.51"	4.25"	90%
JAN	9.10"	9.92"	[illegible]

JAN. '03

4/8

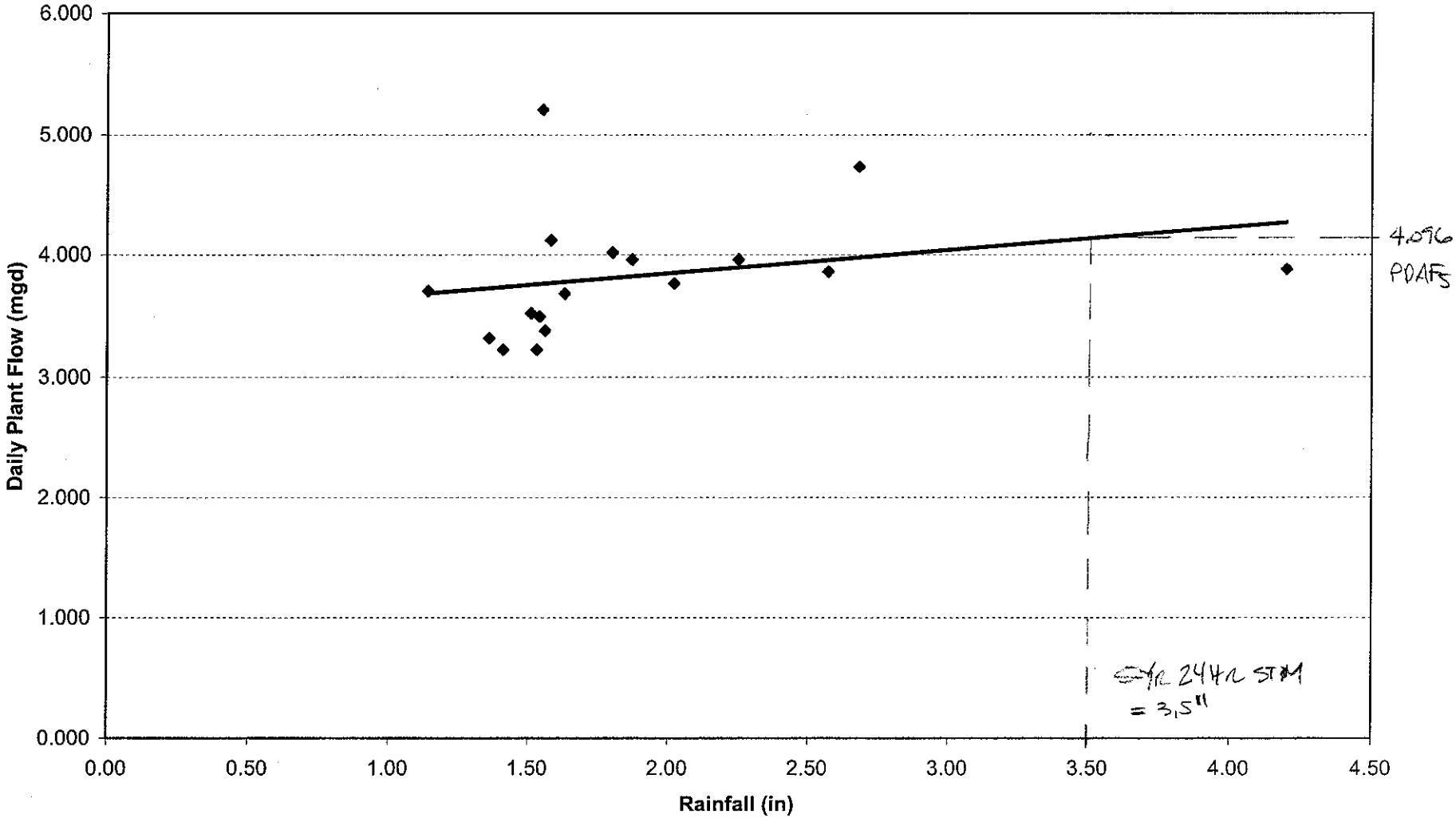
DEQ Graph #1
Avg Plant Flow vs. Winter Rainfall
Ap '03 - Ap '04



	DATA	#20 AVG	
MAY	2.51"	4.25	.9 PROB
JAN	9.10	9.92	.8 PROB

2/6

DEQ Graph #2
Daily Plant Flow vs. Daily Rainfall



Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

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Climatography of the United States No. 20 1971-2000

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SALEM MCNARY AP, OR

COOP ID: 357500

Climate Division: OR 2 **NWS Call Sign: SLE** **Elevation: 205 Feet** **Lat: 44°54N** **Lon: 123°00W**

Precipitation (inches)

	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Median	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	5.84	6.06	3.30	1933	2	10.89	1974	.41	1985	17.3	12.0	3.8	1.2	1.49	2.04	2.88	3.63	4.37	5.15	6.02	7.05	8.40	10.52	12.51
Feb	5.09	4.41	2.99	1937	1	13.01	1996	.75	1988	15.8	11.5	3.4	.8	1.40	1.88	2.62	3.26	3.89	4.54	5.27	6.14	7.26	9.02	10.66
Mar	4.17	3.73	2.55	1943	31	8.56	1983	.89	1992	16.9	11.3	2.4	.3	1.53	1.92	2.49	2.96	3.40	3.86	4.36	4.94	5.68	6.82	7.86
Apr	2.76	2.54	2.21	1937	13	5.72	1996	.62	1977	14.0	8.3	1.3	.1	.84	1.11	1.50	1.83	2.16	2.50	2.87	3.30	3.87	4.75	5.57
May	2.13	1.92	1.76	1991	17	5.56	1998	.05	1992	11.3	6.2	1.0	.1	.44	.63	.94	1.23	1.52	1.82	2.17	2.59	3.14	4.03	4.86
Jun	1.45	1.13	1.63	1985	6	4.19	1984	.26	1987	7.7	3.9	.7	.2	.31	.44	.66	.85	1.04	1.25	1.48	1.76	2.13	2.72	3.27
Jul	.57	.33	1.80	1987	18	2.63	1983	.00+	1994	3.4	1.6	.2	@	.00	.01	.06	.13	.22	.34	.48	.67	.95	1.43	1.93
Aug	.68	.41	1.14	1971	31	2.56	1978	.00+	1988	3.9	2.0	.2	@	.00	.00	.04	.13	.24	.38	.57	.81	1.16	1.77	2.39
Sep	1.43	1.16	1.76	1969	17	3.98	1971	.00	1975	6.7	3.8	.8	.2	.02	.10	.27	.46	.69	.96	1.30	1.73	2.34	3.39	4.45
Oct	3.03	2.62	2.71	1994	31	7.96	1994	.12	1988	11.0	6.8	1.9	.4	.43	.68	1.12	1.54	1.98	2.46	3.02	3.70	4.62	6.12	7.56
Nov	6.39	6.00	2.85	1996	19	15.23	1973	1.13	1976	18.2	12.9	4.3	1.3	1.83	2.44	3.36	4.15	4.92	5.73	6.63	7.68	9.04	11.18	13.17
Dec	6.46	6.67	4.30	1933	6	15.01	1996	1.26	1976	18.0	12.5	4.7	1.5	1.98	2.59	3.51	4.30	5.06	5.85	6.72	7.75	9.07	11.13	13.04
Ann	40.00	39.07	4.30	Dec 1933	6	15.23	Nov 1973	.00+	Jul 1994	144.2	92.8	24.7	6.1	26.08	28.68	32.07	34.67	37.01	39.28	41.65	44.29	47.51	52.23	56.35

5-YR JAN

5-YR MAY

· Also occurred on an earlier date(s)
Denotes amounts of a trace
@ Denotes mean number of days greater than 0 but less than .05
* Statistics not puted because less than six years out of thirty had measurable precipit

(1) From the 1971-2000 Monthly Normals
(2) Derived from station's available digital record: 1928-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.htm.

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

Climatography of the United States No. 20 1971-2000

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: DALLAS 2 NE, OR **COOP ID: 352112**

Climate Division: OR 2 **NWS Call Sign:** **Elevation: 290 Feet** **Lat: 44°57N** **Lon: 123°18W**

5-YR JAN

Precipitation (inches)

	Precipitation Totals									Mean Number of Days (3)				Precipitation Probabilities (1) Probability that the monthly/annual precipitation will be equal to or less than the indicated amount										
	Means/ Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels These values were determined from the incomplete gamma distribution										
Month	Mean	Median	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	7.82	8.52	3.91	1974	15	13.71	1995	.26	1985	17.7	12.2	5.2	1.8	1.74	2.46	3.61	4.64	5.68	6.78	8.02	9.50	11.44	14.54	17.47
Feb	6.66	6.28	3.23	1996	6	17.05	1999	1.29	1988	15.5	10.6	4.3	1.3	1.80	2.43	3.39	4.23	5.06	5.93	6.89	8.03	9.52	11.85	14.03
Mar	5.33	5.14	2.30	1943	31	11.18	1983	1.10	1992	16.4	11.1	3.1	.7	1.92	2.42	3.14	3.75	4.33	4.92	5.57	6.32	7.28	8.77	10.13
Apr	3.24	2.63	2.33	1937	13	7.20	1996	.67	1977	12.8	7.4	1.8	.3	.84	1.14	1.61	2.03	2.44	2.87	3.35	3.91	4.66	5.82	6.92
May	2.21	2.05	1.57	1991	17	5.80	1998	.02	1992	10.3	5.7	1.0	.2	.31	.49	.81	1.12	1.44	1.79	2.20	2.70	3.37	4.47	5.53
Jun	1.41	1.19	1.53	2001	27	3.78	1981	.10	1987	7.2	3.9	.7	.1	.28	.41	.62	.81	1.00	1.21	1.44	1.72	2.09	2.69	3.25
Jul	.50	.32	1.75	1987	18	2.05	1987	.00+	1994	3.3	1.3	.2	.1	.00	.00	.06	.14	.22	.33	.45	.61	.84	1.22	1.61
Aug	.67	.55	1.21	1954	30	1.73+	1978	.00+	1998	3.5	1.8	.4	.0	.00	.00	.06	.15	.26	.40	.57	.80	1.13	1.70	2.28
Sep	1.44	.96	1.42	1969	18	4.01	1978	.00	1975	6.5	3.7	1.0	@	.03	.13	.31	.52	.75	1.02	1.34	1.75	2.33	3.31	4.28
Oct	3.28	2.98	3.92	1994	27	7.43	1975	.13	1988	10.4	6.1	2.3	.6	.47	.74	1.21	1.67	2.14	2.66	3.27	4.01	5.01	6.64	8.20
Nov	7.79	7.23	4.20	1996	19	21.24	1973	1.55	1976	17.5	13.0	4.8	1.5	2.09	2.83	3.95	4.94	5.91	6.93	8.06	9.40	11.15	13.88	16.44
Dec	8.78	8.65	4.32	1964	22	21.93	1996	1.83	1976	17.6	12.7	6.0	2.4	2.68	3.51	4.76	5.83	6.87	7.94	9.13	10.52	12.32	15.13	17.73
Ann	49.13	48.41	4.32	Dec 1964	22	21.93	Dec 1996	.00+	Aug 1998	138.7	89.5	30.8	9.0	31.28	34.59	38.91	42.25	45.25	48.18	51.23	54.64	58.81	64.93	70.29

10-YR MAY

· Also occurred on an earlier date(s)
Denotes amounts of a trace
@ Denotes mean number of days greater than 0 but less than .05
* Statistics not puted because less than six years out of thirty had measurable precipita

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State of Oregon

Department of Environmental Quality Guidelines

Guidelines for Making Wet-Weather and Peak Flow Projections for Sewage Treatment in Western Oregon: MMDWF, MMWWF, PDAF, and PIF

1. Scope

These guidelines describe a rainfall method for calculating current or prevailing sewage flowrates. It is a shortcut method for using published rainfall statistics to determine peak monthly and daily flows which have specific recurrence intervals, or probabilities of occurrence. The method is only applicable where precipitation strongly impacts sewage flows, as in Western Oregon. Here a consistent storm effect generally prevails in areas where rainfall totals at least 20" to 25" per year.

The guidelines propose working definitions for various flowrates employed in wastewater design, until such time as flowrate definitions may be agreed to and standardized in the field of sanitary engineering. Our working definitions are:

$MMDWF_{10}$: The Maximum Monthly Average Dry-Weather Flow with a 10% Probability of Occurrence

$MMWWF_5$: The Maximum Monthly Average Wet-Weather Flows with a 20% Probability of Occurrence

$PDAF_5$: The Peak Daily Average Flow Associated with a 5-Year Storm

PIF_5: The Peak Instantaneous Flow Attained During a 5-Year PDAF

The guidelines also give examples of four graphs which help determine flowrates of various return frequencies:

Graph #1: Average Monthly Flowrate (MGD) versus Cumulative Monthly Rainfall (inches per month)

Graph #2 Flowrate (MGD) versus 24-hour Rainfall Intensity (inches per day)

Graph #3 Flowrate (MGD) versus Probability (%)

Graph #4 Flowrate (MGD) versus Total Suspended Solids (mg/l)

Our intent here is not to dictate or limit the approach used to estimate future design flows, but rather to establish a minimum baseline for comparison. In areas where there is enough rainfall to make a significant impact on sewage flowrates, the rainfall method described here should always be presented as part of the discussion on design flow projections, including Graphs # 1, 2, and 3. Graph # 4 can sometimes help to compensate for missing flow measurements when estimating $PDAF_5$ and PIF_5, and it should also be included if used.

Baseline flowrates, estimated using this rainfall method, should be considered the minimum estimate for current flows from which to project future flowrates. Flow projections to the design year (normally 20 years out) should then reflect anticipated growth as well as can be predicted.

2. Graph # 1 (Monthly Average Flowrate versus Monthly Cumulative Rainfall)

In Western Oregon, the main cause of extreme sewage flows is rain. To estimate a flowrate, the first step is to identify the exact relationship between peak storms and peak sewage flows. This will involve drawing a graph of flowrate versus rainfall, normally based on plant records. All low-groundwater months, when storms do not contribute a proportional amount to sewage flows, would interfere with the correlation and should be excluded.

As may be seen in the attached example of Graph #1, the correlation is conveniently presented in the form of monthly average daily flows (million gallons per day) versus total monthly rainfall accumulation (inches per month). A treatment plant's Daily Monitoring Reports (DMR's) will provide both types of data. Such a graph should reflect the current impact of rainfall on sewage flows under prevailing conditions, whenever groundwater levels are high. A table describing each data point (not shown here) should also be provided to document and help validate the graph.

Data must normally be limited to the period January-May, as the groundwater level in Western Oregon tends to sink in June and stay deep until December. Data should also be limited to the most recent year to avoid growth effects that may skew or mask the flow/rainfall correlation. A few selected points from the previous year may be warranted if a correlation is not clear-cut or if unreliable data make it advisable to exclude several outliers. Approximately 5 data points is enough if they are good ones.

This approach minimizes growth effects and does not involve a statistical analysis of several years of plant flow data. If the precipitation pattern is normal and the flow data are accurate, Graph #1 will illustrate whether a consistent flowrate-rainfall relationship prevails under peak monthly flow conditions.

3. Background and Basis for Design Flowrates

At one time, annual average flow was the main parameter used for sizing sewage treatment plants. Plants were designed and rated according to their annual average capacity. This convention still continues in regions where effluent limits remain constant year-round, regardless of the season.

In Western Oregon, however, an annual-average design basis had little applicability because of wide flow variations and seasonal effluent limits. Average summer flowrate replaced annual average flowrate as the basis for design, and average dry-weather flow became established as the basis for issuing NPDES permits.

Oregon NPDES permits still designate an "Average Dry-Weather Flow" (ADWF) for each treatment plant. The ADWF is the average of daily flows over the 6-month dry-weather period, roughly May

through October. This is the flowrate on which dry-weather mass loads are based.*

However, from the standpoint of reliability, it is implicit in the concept of a seasonal or annual average that there is a 50% chance every year for possible overload and failure of the process. To base design on average capacity implied a potential failure or sewage overflow every other year, which presented an excessive risk to the environment. In 1991, we stopped using average flows as a design basis for sewage treatment in favor of the 5-year flow, which presents only 20% probability of a failure in any given year.

In 1996, we concluded that even a 20% probability of failure presented an excessive risk in the summer. The probability of a summertime failure or sewage overflow has now been reduced to 10%, which amounts to one failure every 10 years on average. This has the effect of further reducing the potential for poor treatment or raw sewage overflows during the period of May through October. An immediate consequence is to require somewhat larger and more reliable treatment facilities than previously.**

The regulations adopted in 1996, which require design capacities of $MMWWF_5$ and $MMDWF_{10}$, were published in OAR 34-41-120 (13) and (14). The anticipated compliance in the winter months with capacity at he $MMWWF_5$ would be 98% (59/60 = 0.983). Compliance in the summer months with capacity at the $MMDWF_{10}$ would be 99% (119/120 = 0.991). The use of these design flowrates assures compliance with the goals of EPA's water-quality regulations, which are designed to protect the environment if the regulations are met 95% of the time.

4. Estimating Current Maximum Monthly Design Flows

$MMDWF_{10}$

The Maximum Monthly Average Dry-Weather Flow would be the monthly average flow in the rainiest summer month of high groundwater. West of the Oregon Cascades, the MMDWF almost invariably occurs in May. On Graph # 1, the 10-Year MMDWF will be the anticipated monthly flow corresponding to the monthly rainfall accumulation during May with a 10% probability of occurrence in any given year.

The US Weather Bureau publishes statistical compilations for weather stations in Oregon by month. A convenient source is the Climatological Summary No. 20, Years 1951-1980 (see attached example). The 10-year May accumulation is indicated here as the 90% value. That is, the amount which exceeds 9 out of 10 totals which have been recorded in May.

With this approach to estimating $MMDWF_{10}$, note that is not necessary to have 10 years of plant flow data. Only about 4 to 8 good sets of Monthly Flow/Cumulative Rainfall data are needed to draw Graph # 1, showing $MMDWF_{10}$ at the 90% total for May. The statistics are developed through the rainfall data rather than through a database of plant flow records.

Another source of rainfall statistics is Johnson and Dart's Variability of Precipitation in the Pacific Northwest published in 1982 by the Portland State University Department of Geography. The Oregon State Meteorologist at OSU in Corvallis has extensive additional data and can advise on specific applications.

$MMWWF_5$

The Maximum Monthly Average Wet-Weather Flow represents the highest monthly average attained during the winter period of high groundwater. West of the Cascades, high groundwater is usually not attained until January, and the MMWWF (maximum monthly wet-weather flow) occurs in January. Sometimes the period of October-December produces significant storms, but the ground is still dry. Heavy storms generally do not begin to cause a reliable or consistent infiltration response until January.

Referring to the Climatological Summary, the 5-year January accumulation is listed as the 80% value. That is, the amount of rainfall that exceeds 4 out of 5 totals that have been recorded in January. On Graph #1, this 80% January rainfall will correspond to the current 5-year MMWWF.

5. Estimating Current Peak Daily Average Flow (5-Year PDAF)

In Western Oregon, $PDAF_5$ invariably corresponds to the 5-year storm: it is the flow that will result from a 5-year storm during a period of high groundwater. For convenience we recommend the 24-hour storm period for $PDAF_5$ analysis, as plant rainfall and flow records reflect the previous 24 hours. However, other time periods such as the 6-hour storm or 48-hour storm can be considered, where such data are available, and they may be more useful than 24-hour storm data in some cases.

$PDAF_5$ will not be directly available from plant records unless a 5-year storm was recently experienced during the high groundwater period of January-April. However, it can be determined by constructing a graph that

shows the relationship between daily plant flow (MGD) and daily rainfall (inches per day). An example is attached as Graph # 2. Large storms going back several years should be used to define the graph, but one must use only records where the antecedent weather for each storm was wet and groundwater levels were high. Numerous large storms will not meet these conditions and should not be used.

On Graph # 2, $PDAF_5$ will correspond to the 5-year, 24-hour storm. This storm may be roughly estimated from isopluvial maps based on Weather Bureau records such as NOAA Atlas 2, Volume X, Figure 26. If a more refined 5-year, 24-hour storm intensity is desired, several decades of local rainfall data can be ranked and analyzed for probability of recurrence.

6. Estimating Current Peak Instantaneous Flow (PIF_5)

PIF_5 Estimate Using A Diurnal Peaking Factor

PIF_5 is the peak instantaneous or peak hourly flow associated with a 5-Year PDAF. That is, the peak flow resulting from a 5-year storm during high groundwater periods. The current PIF_5 may be reflected in plant records, or can be estimated by observing the diurnal peaking factors which characterize high-flow events at the facility. It is desirable to examine actual flow charts that were recorded during high-flow days to extract a suitable peaking factor (or peak-to-average ratio).

The peaking factor will be less during heavy flows than during normal flowrates. This reflects the relatively constant supply of infiltration which occurs only when the groundwater is high. Peaking factors developed from dry-weather periods do not reflect the diminished peaking caused by infiltration, and should not be applied to the PIF_5.

PIF_5 Estimate by Extrapolation (Graph # 3)

PIF5 may also be estimated by means of a probability graph, either using logarithmic probability paper or using a computation program to generate the graph. See attached example Graph # 3, where the PIF_5 was extrapolated from a known $PDAF_5$.

Sometimes this method seems to be the most rational way to estimate the PIF_5 which would be experienced if all bottlenecks were removed from the collection system to eliminate the peak-shaving effects of surcharging and overflows. The basis for this approach is annual probability of occurrence, and assuming that wet weather prevails.

It follows from this assumption that the year of interest will feature the $MMWWF_5$, and within it a $PDAF_5$ and PIF_5. The average annual flowrate will be the average of AWWF and ADWF, both of which are available from plant records. However, during dry years, the records should be adjusted for growth to a reasonably wet year (e.g. 1995-1996), consistent with our assumption of wet weather.

These assumptions yield the following probabilities of occurrence:

- The average annual flow, the mean of summer (ADWF) and winter (AWWF) flowrates, is likely to occur 6/12 of the time or 50% probability.
- A peak monthly flow, $MMWWF_5$, occurs 1/12 of the time or 8.3% probability.
- A peak weekly flow occurs 1/52 of the time or 1.9% probability
- The $PDAF_5$ occurs once in 365 days or 0.27% probability.

The PIF_5 occurs once in 8,760 hours or 0.011% probability.

Graph # 3 should always be drawn as a check on estimated flowrates. Graph # 3 will show whether the various flowrates are theoretically coherent. A reasonable statistical consistency will be apparent if the estimates are realistic.

PIF and $PDAF_5$ Estimates by TSS Records (Graph # 4)

Too often upstream sewage overflows or undersized meters make peak daily flow records of PDAF and PIF unusable. Using the recorded storm intensity and plant laboratory tests for high-flow days, it may be possible to use influent solids dilution as a surrogate flow meter. This approach entails the realistic assumption of somewhat constant per-capita solids delivery from the collection system in winter and early spring, after the initial fall flush.

Provided that test documentation reflects 24-hour composite samples, and provided that low-groundwater events which would skew the curve are excluded, solids dilution can be a valid approach to determining the true peak flows which correspond to known rainfalls. The attached example Graph # 4 shows an estimated PDAF derived from a curve of dilute TSS as low as 19 mg/l. The influent sewer either choked or spilled all flows above 1.45 MGD., as shown, but the PDAF was estimated at 2.5 MGD based on TSS.

7. Projecting Current Flowrates to the Design Year

There is no standardized approach to projecting from current baseline flowrates to the future design year. The traditional method involves a mechanical application of peaking factors derived from plant records and past experience. It has the virtue of tending to overestimate future flows and to yield amply sized facilities.

This type of systematic error results from applying the same peaking factor to the stormwater contribution as to growth components, despite the fixed statistical basis of the stormwater portion. However, any error here tends to be conservative and beneficial to the environment. A more rational approach consists of summing up all anticipated loadings from all foreseeable sources, and adding them to the current baseline flowrates. This approach tends to result in less excess capacity being designed into the project.

Regardless of the approach taken, all calculations should be clearly documented and annotated, and projections should be based on current flowrates. Both methods will normally involve various adjustments in addition to growth. For example, former overflows and exfiltration from the collection system that may have to be captured in the project, less any inflow removal expected, less any infiltration removal that may be counted on, etc.

8. Documentation and Calculations

Any facility plan or engineering design report should indicate how $MMDWF_{10}$, $MMWWF_5$, $PDAF_5$, and PIF_5 were calculated. Backup data and tabulations that were used should either be included in the text, or be attached in an appendix. Graphs #1 and 2 should be included to show how the baseline flowrates were estimated. Graph # 3 should also be included to illustrate the statistical coherence of both baseline and design-year flowrates. All data points shown in the graphs should be tabulated and identified as to month, year, etc.

Lists of design criteria for sewage treatment works should always include all relevant current and future criteria projected to the design year. The list or tabulation should include as a minimum: ADWF, AWWF, $MMDWF_{10}$, $MMWWF_5$, $PDAF_5$, and PIF_5.

9. Other Flow Criteria for Design

The engineer must usually consider several additional flowrate criteria in establishing the basis of design. Standard manuals of practice list a number of these and their applications. For example: peak 8-hour flow, peak weekly flow, seasonal average flow, minimum daily and hourly flow, dry-weather and wet-weather maximum month BOD and SS loadings, etc. Also many additional flow parameters are needed for lagoon water balances and plant solids balances. Where used, all such criteria should be defined and distinguished to avoid confusion with $MMDWF_{10}$, $MMWWF_5$, $PDAF_5$, and PIF_5.

10. Inquiries

Inquiries about these guidelines should be directed to DEQ regional water-quality plan review engineers.

REFERENCES

Isopluvials of 5-year 24-hour Precipitation, NOAA ATLAS 2, Volume X, Figure 26 (Oregon).

Monthly Precipitation Probability for Oregon in Climatography of the United States No. 20, Climatic Summaries for Selected Sites, 1951-1980: Asheville, N.C., National Climatic Data Center, NOAA, US Department of Commerce.

Descriptive Statistics, Monthly Precipitation Data (1940-1979), in Johnson and Dart, Variability of Precipitation in the Pacific Northwest: Spatial and Temporal Characteristics: Portland, Department of Geography, Portland State University, 1982.

ATTACHMENTS

Graph # 1 Example (Average Monthly Flowrate versus Total Monthly Rainfall)

Graph # 2 Example (Daily Flowrate versus Rainfall)

Graph # 3 Example (Flowrate versus Probability)

Graph # 4 Example (Flowrate versus TSS)

Isopluvial Chart Example (Western Oregon 5-year, 24-hour storm)

Rainfall Probability Table Example (Oregon City Gauge)

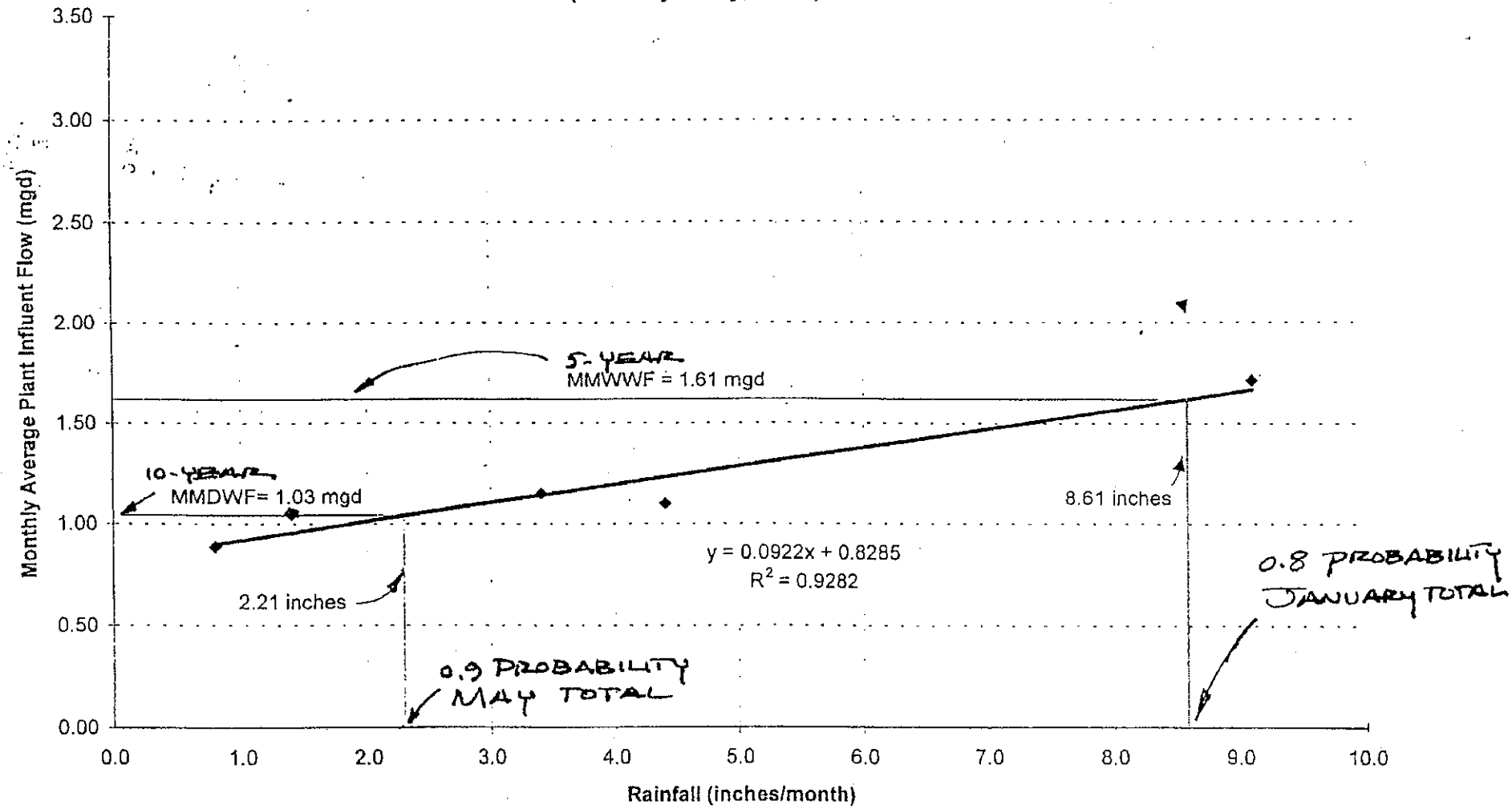
DSM:QSTP4.FPR

Orig. I.91

Rev. VIII.94

Rev. IV.96

Figure 1
Average Plant Flow vs. Winter Rainfall
(January - May, 1995)

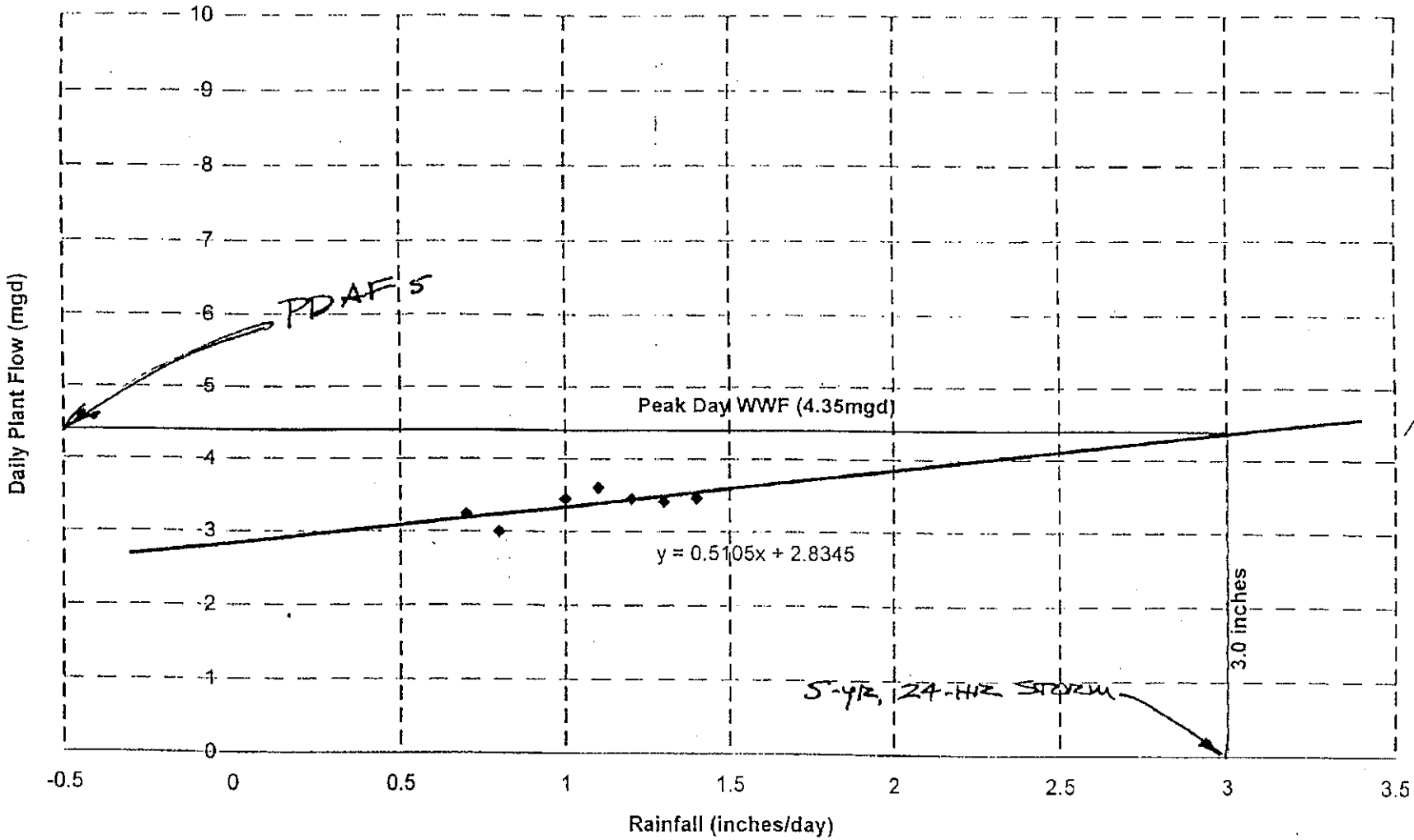


EXAMPLE
GRAPH # 1

Figure 3

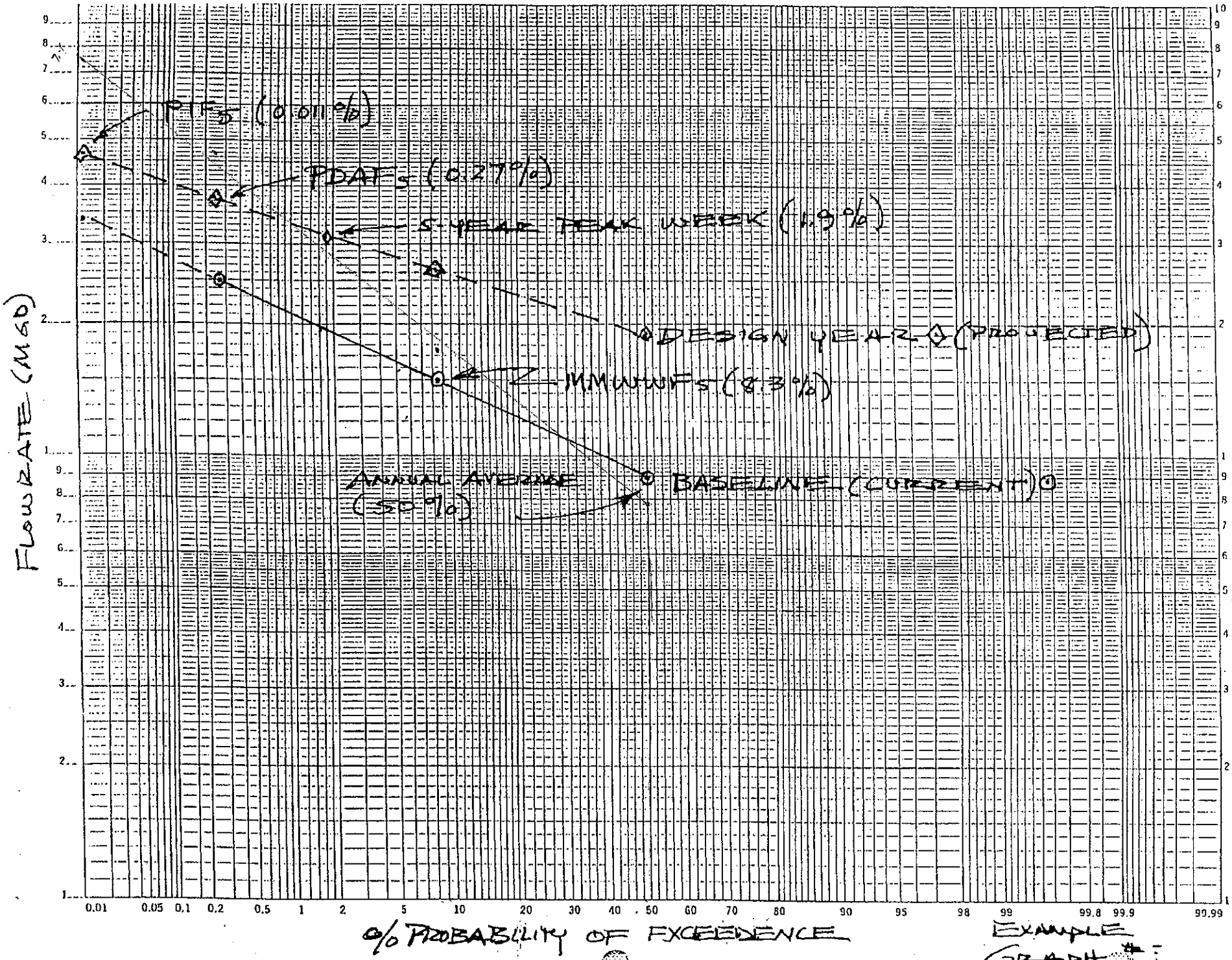
Plant Flow vs. Storm Rainfall

(Jan-May, 1992-1995)

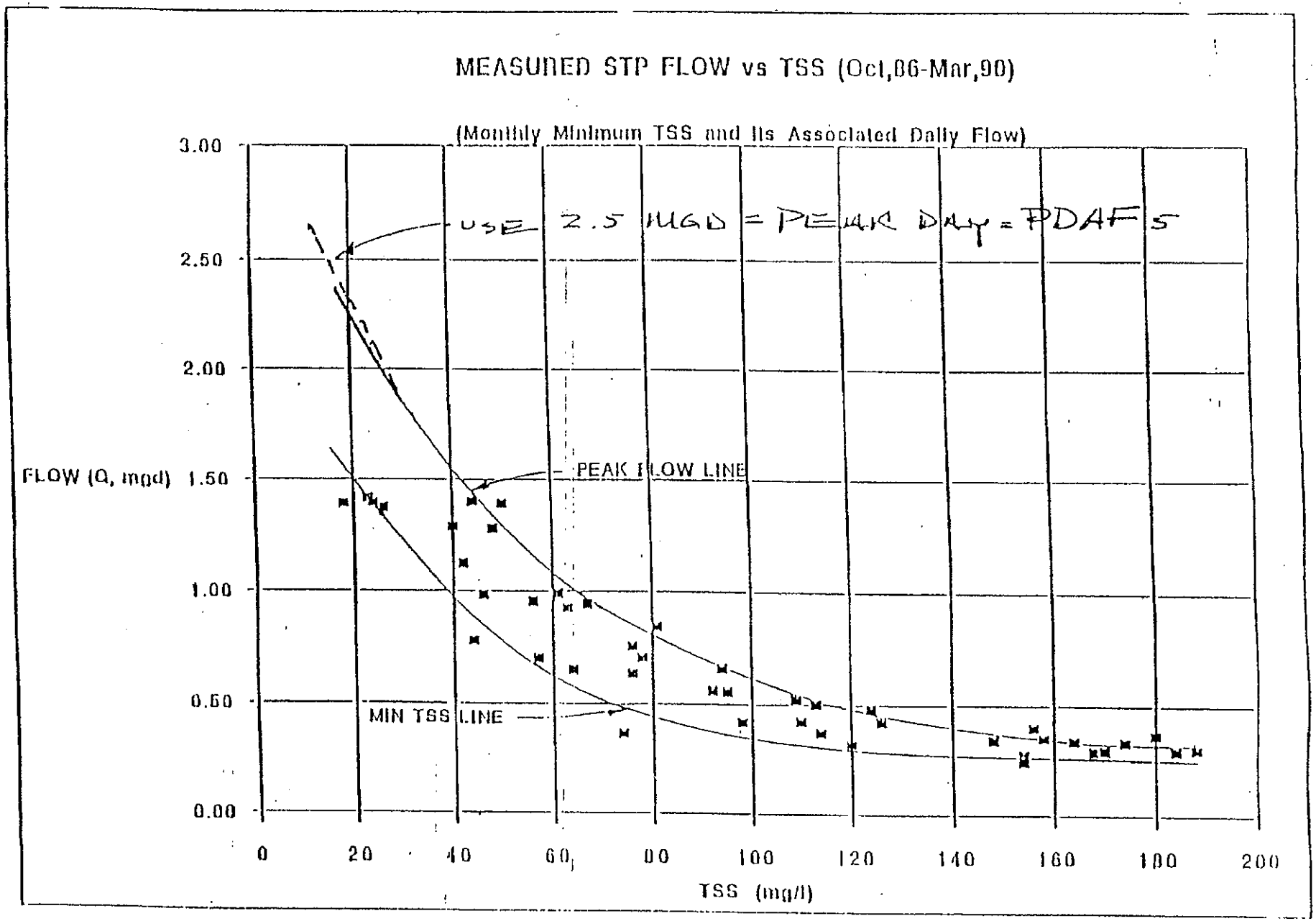


c:\excel\reports\winston\wingrn3.xls

EXAMPLE
GRAPH # 2

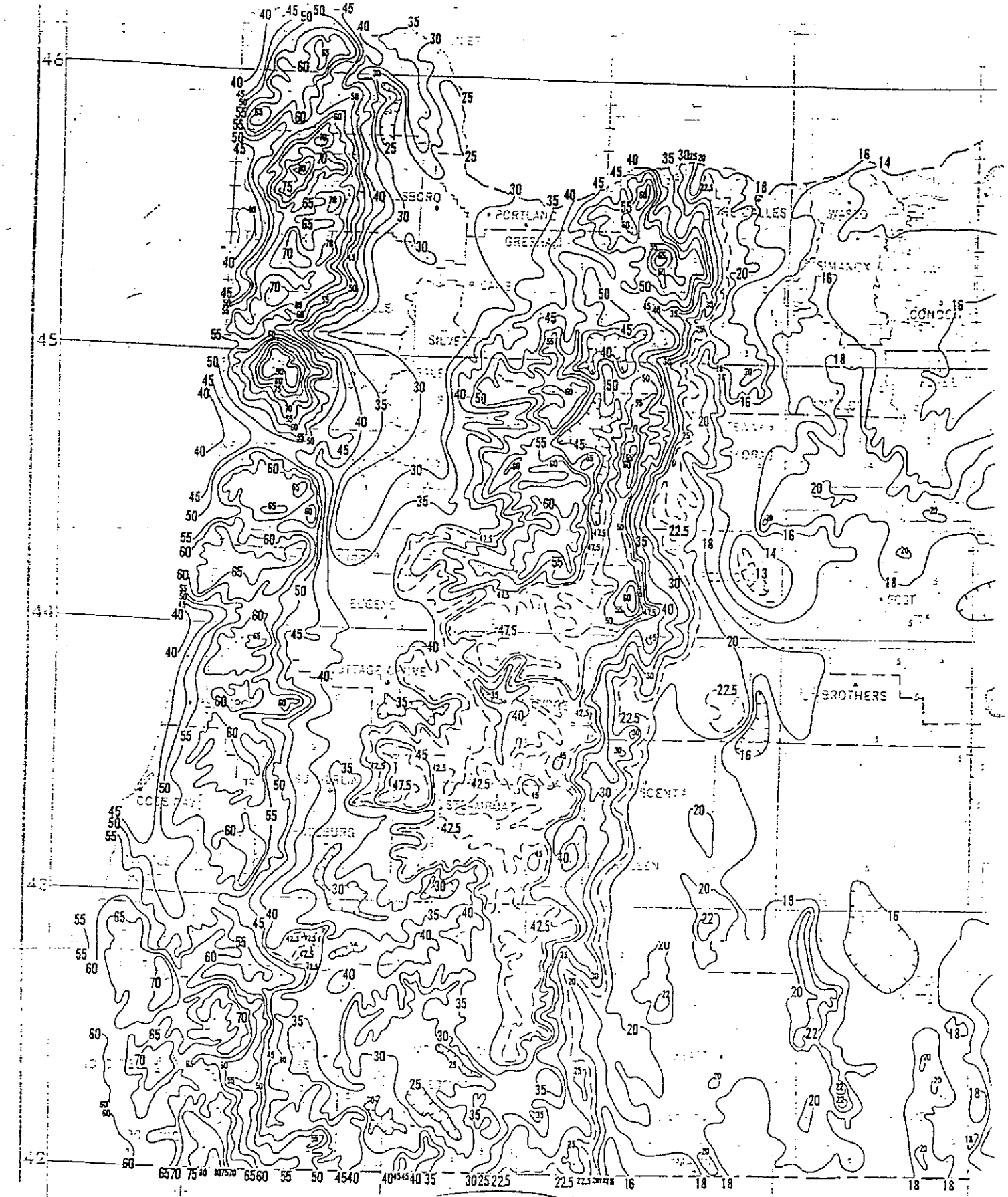


EXAMPLE GRAPH #1



City of Oakridge

EXAMPLE
GRAPH #4
FLOWRATE VS. MIN. S.S.



OREGON

5-YR, 24-HR STORMS IN TENTHS OF AN INCH

NOAA ATLAS 2, Volume X

Prepared by U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service, Office of Hydrology

Prepared for U.S. Department of Agriculture.
Soil Conservation Service, Engineering Division

CLIMATOGRAPHY OF THE UNITED STATES NO. 20
OREGON CITY, OR

CLIMATOLOGICAL SUMMARY

PERIOD: 1951-80
ELEVATION: 167 FT

	TEMPERATURE (F) MEANS * DAILY MAXIMUM	* DAILY MINIMUM	* MONTHLY	EXTREMES RECORD HIGHEST	YEAR	DAY	RECORD LOWEST	YEAR	DAY	MEAN NUMBER OF DAYS MAX 90 AND ABOVE	MAX 32 AND BELOW	MIN 32 AND BELOW	MIN 0 AND BELOW	DEGREE DAYS * HEATING BASE 65	* COOLING BASE 65	PRECIPITATION TOTALS (INCHES) * MEAN	* GREATEST MONTHLY	YEAR	GREATEST DAILY	YEAR	DAY	SNOW MEAN	MAXIMUM MONTHLY	YEAR	MEAN NUMBER OF DAYS .10 OR MORE	.50 OR MORE	1.00 OR MORE
JAN	45.9	34.4	40.2	64+	58	15	9+	57	27	0	2	12	0	769	0	8.11	16.77	53	2.86	74	15	2.7	18.9	69	14	5	2
FEB	51.7	36.9	44.3	73+	68	29	13+	79	2	0	0	7	0	580	0	5.14	11.74	61	3.13	68	19	.4	5.2	62	11	3	1
MAR	55.5	38.0	46.8	77+	64	29	22	71	1	0	0	5	0	564	0	4.99	9.43	57	2.09	63	29	.7	11.2	51	12	3	1
APR	62.0	41.1	51.5	91+	57	29	28+	72	2	0	0	1	0	405	0	3.37	9.44	69	2.20	69	18	.0	.0		8	2	0
MAY	69.4	46.1	57.8	96	63	20	31+	54	1	1	0	0	0	232	9	2.64	5.80	60	1.58	63	06	.0	.0		7	1	0
JUN	75.1	51.3	63.3	99+	61	17	37+	76	3	2	0	0	0	107	56	1.87	4.48	69	1.93	69	23	.0	.0		4	1	0
JUL	82.4	54.4	68.4	107	56	19	41+	76	2	6	0	0	0	23	129	.56	2.82	74	.99	74	08	.0	.0		2	0	0
AUG	81.2	54.3	67.8	106+	77	17	41+	51	29	5	0	0	0	44	131	1.24	4.95	68	2.43	56	25	.0	.0		3	1	0
SEP	76.1	51.1	63.6	101+	58	7	33+	65	17	2	0	0	0	98	56	2.08	4.50	69	1.86	51	30	.0	.0		4	1	0
OCT	64.8	45.0	54.9	94	70	3	24+	71	28	0	0	1	0	313	0	3.79	7.69	56	2.40	55	09	.0	.0		9	2	1
NOV	53.4	39.2	46.3	73	70	2	9+	55	15	0	0	5	0	561	0	6.59	14.21	73	3.35	60	24	.2	2.0	70	12	4	2
DEC	47.5	36.1	41.8	66+	80	30	6+	64	17	0	1	8	0	719	0	8.02	14.78	64	3.22	64	22	1.2	13.6	68	14	6	2
YEAR	63.8	44.0	53.9	107	JUL 56	19	6	DEC 64	17	16	3	39	0	4415	381	48.40	16.77	JAN 53	3.35	NOV 60	24	5.2	18.9	JAN 69	100	29	9

*FROM 1951-80 NORMALS

ESTIMATED VALUE BASED ON DATA FROM SURROUNDING STATIONS

+ ALSO ON EARLIER DATES.

DEGREE DAYS TO SELECTED BASE TEMPERATURES (F)

BASE BELOW	HEATING DEGREE DAYS JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
65	769	580	564	405	232	107	23	44	98	313	561	719	4415
60	614	440	409	259	113	37	0	10	30	166	411	564	3053
57	521	356	316	177	64	15	0	0	12	93	321	471	2346
55	466	305	260	129	38	8	0	0	6	58	267	409	1946
50	324	181	130	46	7	0	0	0	0	8	140	262	1098

BASE ABOVE	COOLING DEGREE DAYS JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
55	7	5	6	24	125	257	415	397	264	55	6	0	1561
57	0	0	0	12	89	204	353	339	210	28	0	0	1235
60	0	0	0	0	45	136	264	252	138	7	0	0	842
65	0	0	0	0	9	56	129	131	56	0	0	0	381
70	0	0	0	0	0	13	43	52	12	0	0	0	120

DERIVED FROM THE 1951-80 MONTHLY NORMALS

PROBABILITY THAT THE MONTHLY PRECIPITATION WILL BE EQUAL TO OR LESS THAN THE INDICATED PRECIPITATION AMOUNT

MONTHLY PRECIPITATION (INCHES)

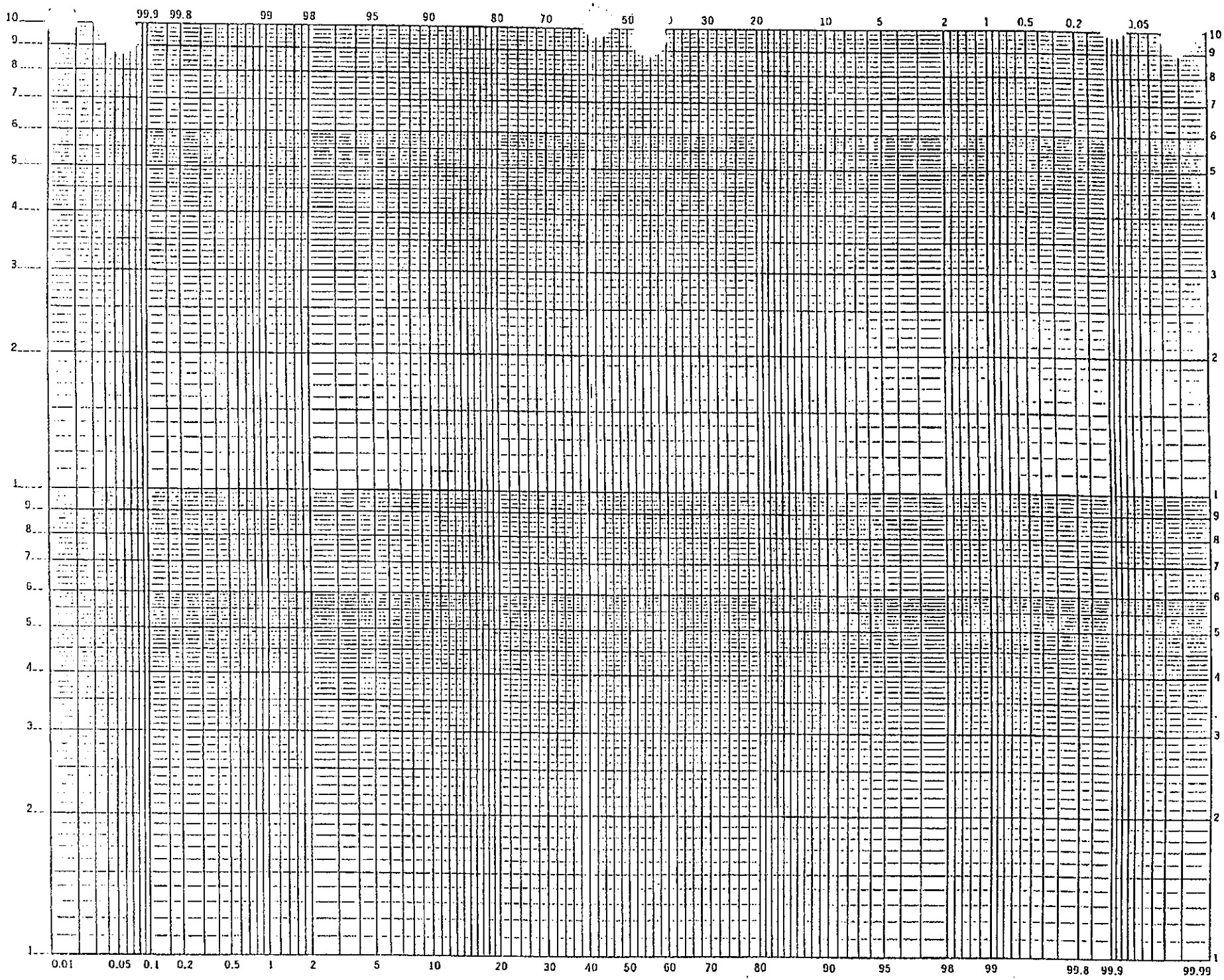
PROBABILITY LEVELS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
.05	2.22	1.95	2.16	.88	.90	.34	.00	.00	.14	.93	1.86	2.96
.10	2.99	2.43	2.61	1.19	1.15	.51	.00	.00	.35	1.29	2.49	3.71
.20	4.16	3.11	3.24	1.68	1.51	.78	.04	.12	.68	1.84	3.44	4.79
.30	5.18	3.68	3.75	2.11	1.82	1.04	.12	.29	.99	2.33	4.26	5.70
.40	6.18	4.23	4.23	2.54	2.12	1.30	.22	.49	1.31	2.82	5.06	6.56
.50	7.23	4.78	4.72	2.98	2.42	1.58	.34	.74	1.66	3.33	5.91	7.43
.60	8.40	5.38	5.24	3.48	2.75	1.90	.48	1.06	2.07	3.91	6.84	8.39
.70	9.77	6.08	5.83	4.07	3.14	2.28	.67	1.48	2.57	4.59	7.93	9.50
.80	11.56	6.97	6.58	4.83	3.64	2.80	.95	2.07	3.24	5.48	9.36	10.91
.90	14.37	8.33	7.73	6.04	4.42	3.62	1.41	3.11	4.34	6.89	11.59	13.09
.95	16.99	9.58	8.77	7.17	5.13	4.41	1.88	4.17	5.41	8.22	13.68	15.09

THESE VALUES WERE DETERMINED FROM THE INCOMPLETE GAMMA DISTRIBUTION.

5-YR JAN

10-YR MAY

EXAMPLE RAINFALL STATISTICS


99.9 99.8 99 98 95 90 80 70 50 30 20 10 5 2 1 0.5 0.2 0.05
0.01 0.05 0.1 0.2 0.5 1 2 5 10 20 30 40 50 60 70 80 90 95 98 99 99.8 99.9 99.99

APPENDIX D

Lagoon Storage Analysis and Water Balance

INDEPENDENCE, OREGON
WASTE WATER TREATMENT FACILITY
STORAGE VOLUME RECORD SUMMARY JANUARY 1999 - AUGUST 2004
12-Jun-05

	Month	Lagoon No.1 (Beginning)	Lagoon No.1 (Ending)		Lagoon No.2 (Beginning)	Lagoon No.2 (Ending)		Lagoon No.3 (Beginning	Lagoon No.3 (Ending)		Lagoon No.4 (Beginning	Lagoon No.4 (Ending)		Precip (Inch)	Change in Volume Lagoon (Acres)	Precipitation (Acres)
1999	January															
	February															
	March															
	April	5.4	4	*-1.4*	4.2	3	*-1.2*	4.5	3	*-1.5*	2.3	1.9	*-0.4*	*1.58*	-47.685	6.715
	May	4.1	3.7	*-0.4*	3	2.3	*-0.7*	3	1.5	*-1.5*	1.8	1.3	*-0.5*		-34.9	
	June	3.8	5.2	*1.4*	2.3	2.9	*0.6*	1.5	1.2	*-0.3*	1.3	0.9	*-0.4*		19.6	
	July	5.2	5	*-0.2*	2.9	3.7	*0.8*	1.2	2.6	*1.4*	0.9	0.3	*-0.6*		10.6	
	August	5	4.2	*-0.8*	3.5	3.7	*0.2*	2.9	4.3	*1.4*	0.4	1.3	*0.9*		16.3	
	September	4.3	4.9	*0.6*	3.6	3.8	*0.2*	4.3	4	*-0.3*	1.5	2.2	*0.7*		19.3	
	October	4.9	5.7	*0.8*	3.4	3.2	*-0.2*	4	3.8	*-0.2*	2.3	4.6	*2.3*		41.3	
	November	5.8	6.8	*1*	3.1	4.3	*1.2*	3.6	5.2	*1.6*	4.7	5	*0.3*		48.1	
	December			*0*			*0*			*0*			*0*		0	

June -	Summer Storage Depth Change	*1.9 ft*	*0.9 ft*	*2.3 ft*	*3.3 ft*			
October	Summer Storage Volume Change	*26.6*	*12.6*	*18.4*	*49.5*	107.1	*Acre-Feet*	
November	Effluent = *24.5 mg*	*75.4 acre-ft*						
June -	Summer Storage Depth Change	*3 ft*	*2 ft*	*3.7 ft*	*3.7 ft*			
November	Summer Storage Volume Change	*42*	*28*	*29.6*	*55.5*	230.5	*Acre-Feet*	

	Month	Lagoon No.1 (Beginning)	Lagoon No.1 (Ending)		Lagoon No.2 (Beginning)	Lagoon No.2 (Ending)		Lagoon No.3 (Beginning	Lagoon No.3 (Ending)		Lagoon No.4 (Beginning	Lagoon No.4 (Ending)		Precip (Inch)	in Volume Lagoon (Acres)	Precipitation (Acres)	
2000	January	5.8	5.2	*-0.6*	3.2	3.6	*0.4*	3.8	4.4	*0.6*	1.9	3.9	*2*		32		
	February	5.8	5.5	*-0.3*	3.6	4.3	*0.7*	4.3	5	*0.7*	3.8	4.2	*0.4*		17.2		
	March	5.4	5.3	*-0.1*	4.2	3.1	*-1.1*	4.9	3.7	*-1.2*	4.3	3	*-1.3*		-45.9		
	April	5.4	4.5	*-0.9*	3.2	3.1	*-0.1*	3.6	3.8	*0.2*	2.5	1.1	*-1.4*		-33.4		0
	May	4.8	3.3	*-1.5*	3.2	3	*-0.2*	3.7	1.1	*-2.6*	1	1	*0*		-44.6		
	June	3.2	5.7	*2.5*	3	3	*0*	1	0.8	*-0.2*	1	1.4	*0.4*		39.4		
	July	5.3	4.5	*-0.8*	3.3	4	*0.7*	0.8	2.8	*2*	1.4	1.3	*-0.1*		13.1		
	August	4.1	5.2	*1.1*	4.3	5.3	*1*	2.7	1.5	*-1.2*	1.3	1.6	*0.3*		24.3		
	September	4.9	5.8	*0.9*	5.6	5.8	*0.2*	1.5	3.4	*1.9*	1.6	1.7	*0.1*		32.1		
	October	6	6.5	*0.5*	5.7	3.6	*-2.1*	3.4	4.1	*0.7*	1.7	5.4	*3.7*		38.7		
	November	6.6	6.6	*0*	3.4	6.3	*2.9*	4	4.1	*0.1*	5.6	4.2	*-1.4*		20.4		
	December	6.6	5.4	*-1.2*	6.3	4.9	*-1.4*	4.2	4.6	*0.4*	4.3	4.6	*0.3*		-28.7		

June -	Summer Storage Depth Change	*3.3 ft*	*0.6 ft*	*3.1 ft*	*4.4 ft*			
October	Summer Storage Volume Change	*46.2*	*8.4*	*24.8*	*66*	145.4	*Acre-Feet*	
November	Effluent = *10.5 mg*	*32.3 acre-ft*						
June -	Summer Storage Depth Change	*3.4 ft*	*3.3 ft*	*3.1 ft*	*3.2 ft*			
November	Summer Storage Volume Change	*47.6*	*46.2*	*24.8*	*48*	198.9	*Acre-Feet*	

Month	Lagoon No.1 (Beginning)	Lagoon No.1 (Ending)		Lagoon No.2 (Beginning)	Lagoon No.2 (Ending)		Lagoon No.3 (Beginning	Lagoon No.3 (Ending)		Lagoon No.4 (Beginning	Lagoon No.4 (Ending)		Precip (Inch)	in Volume Lagoon (Acres)	Precipitation

2001	January	6	5.7	-0.3	4.7	5.4	0.7	4.5	3.2	-1.3	4.5	2.3	-2.2	-37.8	(Acres)	
	February	6	6.9	0.9	5.3	3.7	-1.6	3.2	3.5	0.3	2.3	3.2	0.9	6.1		
	March	7	6.5	-0.5	3.6	4.9	1.3	3.5	4.3	0.8	3	3.1	0.1	19.1		
	April	6.6	5.4	-1.2	4.6	3.2	-1.4	4.4	3.6	-0.8	3.3	5.3	2	-12.8		0
	May	5.2	4.5	-0.7	3.5	2.9	-0.6	3.6	3	-0.6	5.3	0.5	-4.8	-95		
	June	4.4	7.8	3.4	3	3.2	0.2	2.7	1.7	-1	0.5	0.8	0.3	46.9		
	July	6.6	6.8	0.2	3.7	4.2	0.5	1.7	3.4	1.7	0.8	0.6	-0.2	20.4		
	August	6.9	6.6	-0.3	4	4.2	0.2	3.5	3.9	0.4	0.6	2.2	1.6	25.8		
	September	6.7	6	-0.7	4.1	4.6	0.5	3.9	4.1	0.2	2.3	4	1.7	24.3		
	October	6.1	7.7	1.6	4.6	4.3	-0.3	4	3.8	-0.2	4.1	6	1.9	45.1		
	November	7.4	7.4	0	4.6	5.9	1.3	3.8	4.9	1.1	6.1	6.5	0.4	33		
	December	7.7	4.7	-3	5.9	3.8	-2.1	5	4.2	-0.8	6.3	3.7	-2.6	-116.8		

June -	Summer Storage Depth Change		3.3 ft		1.3 ft		1.1 ft		5.5 ft		
October	Summer Storage Volume Change		46.2		18.2		8.8		82.5	155.7	Acre-Feet
November	Effluent =	34 mg	104.6	acre-ft							
June -	Summer Storage Depth Change		3 ft		2.9 ft		2.2 ft		6 ft		
November	Summer Storage Volume Change		42		40.6		17.6		90	294.8	Acre-Feet

	Month	Lagoon No.1 (Beginning)	Lagoon No.1 (Ending)		Lagoon No.2 (Beginning)	Lagoon No.2 (Ending)		Lagoon No.3 (Beginning	Lagoon No.3 (Ending)		Lagoon No.4 (Beginning	Lagoon No.4 (Ending)		Precip (Inch)	in Volume Lagoon (Acres)	Precipitation (Acres)	
2002	January	4.8	6.5	1.7	3.7	4.5	0.8	3.7	4.5	0.8	3.6	5.3	1.7		66.9		
	February	6.2	7	0.8	4.7	3.4	-1.3	4.6	4.4	-0.2	5.5	4.7	-0.8		-20.6		
	March	7	6.4	-0.6	3.4	3.4	0	4.1	3.6	-0.5	4.6	5.6	1		2.6		
	April	6.4	4.8	-1.6	3.4	3.6	0.2	3.5	2.5	-1	5.4	2.1	-3.3		-77.1		0
	May	4.5	5.5	1	3.9	2.5	-1.4	2.6	1.5	-1.1	2	1	-1		-29.4		
	June	5.8	6.9	1.1	2.4	3.8	1.4	1.4	1.1	-0.3	1	0.7	-0.3		28.1		
	July	7	7.7	0.7	3.8	4.9	1.1	1.1	0.7	-0.4	0.7	0.6	-0.1		20.5		
	August	7.3	6.3	-1	5.3	5.2	-0.1	0.7	4.8	4.1	0.6	0.6	0		17.4		
	September	6	8.1	2.1	5.4	3.6	-1.8	4.9	4.5	-0.4	0.6	1.6	1		16		
	October	7.8	7.6	-0.2	4	5.4	1.4	4.4	3.7	-0.7	1.6	2.7	1.1		27.7		
	November	7.7	7	-0.7	5.3	5.9	0.6	3.7	3.9	0.2	2.7	6.6	3.9		58.7		
	December	7	7.9	0.9	5.9	5.4	-0.5	3.9	5.4	1.5	6.6	6.9	0.3		22.1		

June -	Summer Storage Depth Change		1.8 ft		3 ft		2.3 ft		1.7 ft		
October	Summer Storage Volume Change		25.2		42		18.4		25.5	111.1	Acre-Feet
November	Effluent =	0 mg	0.0	acre-ft							
June -	Summer Storage Depth Change		1.2 ft		3.5 ft		2.5 ft		5.6 ft		
November	Summer Storage Volume Change		16.8		49		20		84	169.8	Acre-Feet

	Month	Lagoon No.1 (Beginning)	Lagoon No.1 (Ending)		Lagoon No.2 (Beginning)	Lagoon No.2 (Ending)		Lagoon No.3 (Beginning	Lagoon No.3 (Ending)		Lagoon No.4 (Beginning	Lagoon No.4 (Ending)		Precip (Inch)	in Volume Lagoon (Acres)	Precipitation (Acres)	
2003	January	7.9	7.2	-0.7	5.4	4.3	-1.1	5.3	4.6	-0.7	6.4	4.6	-1.8		-57.8		
	February	8	7.4	-0.6	4.4	4.2	-0.2	4.8	3.3	-1.5	4.6	3.4	-1.2		-41.2		
	March	7.2	6	-1.2	4.4	3.8	-0.6	3.5	4.9	1.4	3.3	5.6	2.3		20.5		
	April	6.2	5.4	-0.8	3.6	4.6	1	4.7	5.1	0.4	5.6	4.6	-1		-9		0
	May	5	5.3	0.3	4.8	3.2	-1.6	5.1	2.5	-2.6	4.6	1.8	-2.8		-81		
	June	5.4	5.9	0.5	3.3	4.7	1.4	2.5	2.4	-0.1	1.8	1.3	-0.5		18.3		
	July	5.9	6.5	0.6	4.8	4.7	-0.1	2.5	3.5	1	1.3	1	-0.3		10.5		
	August	6.3	5.1	-1.2	4.6	3.6	-1	3.6	4.2	0.6	0.9	4.3	3.4		25		

	September	5.1	6.2	1.1	3.6	5	1.4	4.2	3.3	-0.9	4.3	4.5	0.2	30.8
	October	6.2	7.6	1.4	5	5.4	0.4	3.3	5.2	1.9	4.5	4.8	0.3	44.9
	November	7.6	7.3	-0.3	5.1	5.9	0.8	5.2	5.1	-0.1	5	3.7	-1.3	-13.3
	December	7.1	8.6	1.5	5.8	4.3	-1.5	5.1	4.9	-0.2	3.9	6.2	2.3	32.9
	Summer Storage Depth Change			2.2 ft			2.1 ft			2.7 ft			3 ft	
	Summer Storage Volume Change			30.8 acre-ft			29.4 acre-ft			21.6 acre-ft			45 acre-ft	126.8 Acre-Feet
November	Effluent =	31.8 mg		97.9 acre-ft										
June -	Summer Storage Depth Change			1.9 ft			2.6 ft			2.6 ft			1.9 ft	
November	Summer Storage Volume Change			26.6			36.4			20.8			28.5	210.2 Acre-Feet

	Month	Lagoon No.1 (Beginning)	Lagoon No.1 (Ending)		Lagoon No.2 (Beginning)	Lagoon No.2 (Ending)		Lagoon No.3 (Beginning	Lagoon No.3 (Ending)		Lagoon No.4 (Beginning	Lagoon No.4 (Ending)		Precip (Inch)	in Volume Lagoon (Acres)	Precipitation (Acres)
2004	January	8.9	7.3	-1.6	4	4.8	0.8	4.9	5.1	0.2	6	3.6	-2.4		-45.6	
	February	7.4	7	-0.4	4.8	4.7	-0.1	5.1	4.8	-0.3	3.5	3.6	0.1		-7.9	
	March	6.9	8	1.1	4.8	3.8	-1	4.9	3.6	-1.3	3.9	2	-1.9		-37.5	
	April	8	6.8	-1.2	3.9	6	2.1	3.6	4.2	0.6	1.9	2.7	0.8		29.4	0
	May	6.9	4.9	-2	6	4.8	-1.2	4.2	4.9	0.7	3.8	4	0.2		-36.2	
	June	4.9	6.4	1.5	4.5	5.1	0.6	4.9	3.4	-1.5	4.3	5.1	0.8		29.4	
	July	6.5	7	0.5	5.1	6.4	1.3	3.5	3.6	0.1	5.1	4.2	-0.9		12.5	
	August	6.6	7.9	1.3	6.4	4.7	-1.7	4	3.9	-0.1	4.2	6.2	2		23.6	
	September			0			0			0			0		0	
	October			0			0			0			0		0	
	November	8.9	7.7	-1.2	6.8	5.9	-0.9	6.4	4.4	-2	7	4.1	-2.9		-88.9	
	December	7.8	6.7	-1.1	5.9	5.7	-0.2	4.4	4.1	-0.3	4	4	0		-20.6	
	Summer Storage Volume Change			-68.6			-63			-39.2			-64.5		-235.3 Acre-Feet	

SUMMARY OF EXISTING LAGOON STORAGE

	Area (Acre)	Operating Depth (Ft)	Operating Volume (Acre-Ft)			
Lagoon No.1	14	4	56	=	18.2	mg
Lagoon No.2	14	1.8	25.2		8.2	mg
Lagoon No.3	8	2	16		5.2	mg
Lagoon No.4	15	6	90		29.3	mg
Total	51	13.8	187.2	=	59.9	mg

SUMMARY OF HISTORIC LAGOON STORAGE

	Storage Volume (acre-ft)	Storage Volume (mg)	Remaining Storage Volume (acre-ft)	Remaining Storage Volume (mg)	% of Volume Remaining
1999	107.1	34.9	80.1	26.1	43%
2000	145.4	47.4	41.8	13.6	22%
2001	155.7	50.7	31.5	10.3	17%
2002	111.1	36.2	76.1	24.8	41%
2003	126.8	41.3	60.4	19.7	32%
Average	129.2	42.1	58.0	18.9	31%

APPENDIX E

WWTF Effluent vs. NPDES
Summary of WWTF Influent, Effluent, and Performance

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER PRELIMINARY DESIGN REPORT
J.O. INDP0008

	2003 Population =	6850
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	*2004 Population =*	*7100*
From April 2003 to April 2004	**Average =**	***6975***

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Apr-03	0.09	0.951					1.561				
2-Apr-03	0.16	1.081	105.5	0.136	108.0	0.140	1.561	4.1	0.008	10.7	0.020
3-Apr-03	0.65	1.435					1.561				
4-Apr-03	0.30	1.420					1.561				
5-Apr-03	0.30	1.406					1.561				
6-Apr-03	0.29	1.357					1.561				
7-Apr-03	0.02	0.803					1.561				
8-Apr-03	0.00	1.003					1.561				
9-Apr-03	0.00	0.969	81.2	0.094	64.0	0.074	1.561	4.2	0.008	3.3	0.006
10-Apr-03	0.07	1.036					1.561				
11-Apr-03	0.10	1.082					1.561				
12-Apr-03	0.96	2.282					1.561				
13-Apr-03	0.37	1.671					1.561				
14-Apr-03	0.01	1.100					1.561				
15-Apr-03	0.25	0.795					1.561				
16-Apr-03	0.05	0.757	142.2	0.129	82.7	0.075	1.387	8.4	0.014	4.0	0.007
17-Apr-03	0.13	0.702					1.387				
18-Apr-03	0.02	0.612					1.339				
19-Apr-03	0.00	0.608					1.339				
20-Apr-03	0.00	0.995					1.339				
21-Apr-03	0.44	1.161					1.700				
22-Apr-03	0.00	0.770					1.700				
23-Apr-03	0.50	2.075	63.9	0.159	50.0	0.124	1.700	6.5	0.013	6.3	0.013
24-Apr-03	0.39	1.487					1.700				
25-Apr-03	0.09	1.099					1.650				
26-Apr-03	0.00	0.963					1.650				
27-Apr-03	0.00	0.792					1.650				
28-Apr-03	0.26	1.005					1.650				
29-Apr-03	0.21	0.776					1.650				
30-Apr-03	0.01	0.653	103.0	0.080	106.0	0.083	1.650	1.6	0.003	3.0	0.006
Monthly Totals	5.67	32.846					46.906				
Monthly Avg.			99.2	0.120	82.1	0.099		5.0	0.009	5.5	0.010
Weekly Avg.			142.2	0.159	108.0	0.140		8.4	0.014	10.7	0.020

Ap '03 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	5.0	***30***	8.4	***45***	N/A	**N/A**
TSS (mg/l)	5.5	***50***	10.7	***80***	N/A	**N/A**
BOD_5 (lb/day)	63.8	***500***	97	***750***	97	***1000***
TSS (lb/day)	71.8	***830***	139	***1200***	139	***1700***
BOD_5 Removal	95%	***85% Monthly Avg.***				
TSS Removal	93%	***65% Monthly Avg.***				

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2003 Population =	6850
2004 Population =	*7100*
Average =	***6975***

Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 2003 to April 2004

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-May-03	0.00	0.636					1.650				
2-May-03	0.00	0.581					1.650				
3-May-03	0.10	0.638					1.650				
4-May-03	0.09	0.690					1.650				
5-May-03	0.00	0.714					2.000				
6-May-03	0.00	0.594					2.000				
7-May-03	0.00	0.612	145.0	0.106	84.0	0.061	2.000	3.0	0.007	4.0	0.010
8-May-03	0.02	0.549					2.000				
9-May-03	0.00	0.516					2.122				
10-May-03	0.00	0.520					2.122				
11-May-03	0.00	0.530					2.122				
12-May-03	0.07	0.509					2.122				
13-May-03	0.00	0.485					2.122				
14-May-03	0.00	0.482	167.0	0.096	173.0	0.100	1.437	3.0	0.005	6.0	0.010
15-May-03	0.00	0.483					1.437				
16-May-03	0.19	0.483					1.439				
17-May-03	0.00	0.493					1.387				
18-May-03	0.03	0.482					1.387				
19-May-03	0.00	0.465					1.387				
20-May-03	0.00	0.466					1.387				
21-May-03	0.00	0.448	70.6	0.038	34.0	0.018	0.912	4.4	0.005	7.0	0.008
22-May-03	0.00	0.455					0.912				
23-May-03	0.00	0.443					0.912				
24-May-03	0.00	0.467					0.912				
25-May-03	0.10	0.425					0.912				
26-May-03	0.00	0.473					0.912				
27-May-03	0.00	0.442					0.395				
28-May-03	0.00	0.440	206.0	0.108	129.0	0.068	0.395	10.2	0.005	11.0	0.005
29-May-03	0.00	0.452					0.395				
30-May-03	0.13	0.450					0.395				
31-May-03	0.00	0.439					0.000				
Monthly Totals	0.73	15.862					42.124				
Monthly Avg.			147.2	0.087	105.0	0.062		5.2	0.005	7.0	0.008
Weekly Avg.			206.0	0.108	173.0	0.100		10.2	0.007	11.0	0.010

May '03 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	5.2	***30***	10.2	***45***	N/A	**N/A**
TSS (mg/l)	7.0	***50***	11.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	38.3	***500***	50	***750***	50	***1000***
TSS (lb/day)	57.0	***830***	72	***1200***	72	***1700***
BOD_5 Removal	97%	***85% Monthly Avg.***				
TSS Removal	93%	***65% Monthly Avg.***				

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SANITARY SEWER PRELIMINARY DESIGN REPORT
J.O. INDP0008

2003 Population =	6850
2004 Population =	*7100*
Average =	***6975***

Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 2003 to April 2004

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jun-03	0.00	0.460					0.000				
2-Jun-03	0.00	0.448					0.000				
3-Jun-03	0.00	0.449					0.000				
4-Jun-03	0.00	0.454	116.0	0.063	14.7	0.008	0.000				
5-Jun-03	0.00	0.446					0.000				
6-Jun-03	0.00	0.449					0.000				
7-Jun-03	0.00	0.441					0.000				
8-Jun-03	0.00	0.452					0.000				
9-Jun-03	0.00	0.445					0.000				
10-Jun-03	0.00	0.439					0.000				
11-Jun-03	0.00	0.425	153.0	0.078	97.6	0.050	0.000				
12-Jun-03	0.00	0.437					0.000				
13-Jun-03	0.02	0.440					0.000				
14-Jun-03	0.00	0.427					0.000				
15-Jun-03	0.00	0.434					0.000				
16-Jun-03	0.00	0.436					0.000				
17-Jun-03	0.00	0.426					0.000				
18-Jun-03	0.01	0.428	259.0	0.133	190.0	0.097	0.000				
19-Jun-03	0.00	0.435					0.000				
20-Jun-03	0.02	0.419					0.000				
21-Jun-03	0.00	0.443					0.000				
22-Jun-03	0.00	0.446					0.000				
23-Jun-03	0.00	0.439					0.000				
24-Jun-03	0.00	0.429					0.000				
25-Jun-03	0.00	0.428	215.0	0.110	176.0	0.090	0.000				
26-Jun-03	0.00	0.446					0.000				
27-Jun-03	0.00	0.441					0.000				
28-Jun-03	0.00	0.440					0.000				
29-Jun-03	0.00	0.455					0.000				
30-Jun-03	0.00	0.439					0.000				
Monthly Totals	0.05	13.196					0.000				
Monthly Avg.			185.8	0.096	119.6	0.061		0.0	0.000	0.0	0.000
Weekly Avg.			259.0	0.133	190.0	0.097		0.0	0.000	0.0	0.000

June '03 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

CITY OF INDEPENDENCE, OREGON
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	2003 Population =	6850
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	*2004 Population =*	*7100*
From April 2003 to April 2004	**Average =**	***6975***

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jul-03	0.00	0.441					0.000				
2-Jul-03	0.00	0.437	247.0	0.129	143.0	0.075	0.000				
3-Jul-03	0.00	0.422					0.000				
4-Jul-03	0.00	0.465					0.000				
5-Jul-03	0.00	0.433					0.000				
6-Jul-03	0.00	0.460					0.000				
7-Jul-03	0.00	0.453					0.000				
8-Jul-03	0.00	0.445					0.000				
9-Jul-03	0.00	0.435	120.0	0.062	123.0	0.064	0.000				
10-Jul-03	0.00	0.445					0.000				
11-Jul-03	0.00	0.439					0.000				
12-Jul-03	0.00	0.435					0.000				
13-Jul-03	0.00	0.450					0.000				
14-Jul-03	0.00	0.449					0.000				
15-Jul-03	0.00	0.437					0.000				
16-Jul-03	0.00	0.431	132.0	0.068	40.9	0.021	0.000				
17-Jul-03	0.00	0.429					0.000				
18-Jul-03	0.00	0.436					0.000				
19-Jul-03	0.00	0.419					0.000				
20-Jul-03	0.00	0.442					0.000				
21-Jul-03	0.00	0.444					0.000				
22-Jul-03	0.00	0.433					0.000				
23-Jul-03	0.00	0.438	334.0	0.175	307.0	0.161	0.000				
24-Jul-03	0.00	0.437					0.000				
25-Jul-03	0.00	0.410					0.000				
26-Jul-03	0.00	0.445					0.000				
27-Jul-03	0.00	0.435					0.000				
28-Jul-03	0.00	0.447					0.000				
29-Jul-03	0.00	0.429					0.000				
30-Jul-03	0.00	0.423	196.0	0.099	134.0	0.068	0.000				
31-Jul-03	0.00	0.415					0.000				
Monthly Totals	0.00	13.559					0.000				
Monthly Avg.			205.8	0.107	149.6	0.078		0.0	0.000	0.0	0.000
Weekly Avg.			334.0	0.175	307.0	0.161		0.0	0.000	0.0	0.000

July '03 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 2003 to April 2004

2003 Population =	6850
2004 Population =	*7100*
Average =	***6975***

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Aug-03	0.00	0.422					0.000				
2-Aug-03	0.00	0.437					0.000				
3-Aug-03	0.00	0.440					0.000				
4-Aug-03	0.00	0.433					0.000				
5-Aug-03	0.00	0.445					0.000				
6-Aug-03	0.00	0.419	284.0	0.142	136.0	0.068	0.000				
7-Aug-03	0.00	0.441					0.000				
8-Aug-03	0.01	0.415					0.000				
9-Aug-03	0.00	0.424					0.000				
10-Aug-03	0.00	0.448					0.000				
11-Aug-03	0.00	0.440					0.000				
12-Aug-03	0.00	0.435					0.000				
13-Aug-03	0.00	0.423	130.0	0.066	85.5	0.043	0.000				
14-Aug-03	0.00	0.412					0.000				
15-Aug-03	0.00	0.412					0.000				
16-Aug-03	0.00	0.429					0.000				
17-Aug-03	0.00	0.456					0.000				
18-Aug-03	0.00	0.471					0.000				
19-Aug-03	0.00	0.473					0.000				
20-Aug-03	0.00	0.425	294.0	0.149	191.0	0.097	0.000				
21-Aug-03	0.00	0.422					0.000				
22-Aug-03	0.11	0.424					0.000				
23-Aug-03	0.00	0.418					0.000				
24-Aug-03	0.00	0.422					0.000				
25-Aug-03	0.00	0.425					0.000				
26-Aug-03	0.00	0.426					0.000				
27-Aug-03	0.00	0.431	141.0	0.073	50.0	0.026	0.000				
28-Aug-03	0.00	0.422					0.000				
29-Aug-03	0.00	0.404					0.000				
30-Aug-03	0.00	0.423					0.000				
31-Aug-03	0.00	0.414					0.000				
Monthly Totals	0.12	13.331					0.000				
Monthly Avg.			212.3	0.108	115.6	0.059		0.0	0.000	0.0	0.000
Weekly Avg.			294.0	0.149	191.0	0.097		0.0	0.000	0.0	0.000

August '03 Effluent Summary

	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

CITY OF INDEPENDENCE, OREGON
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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 2003 to April 2004

2003 Population =	6850
2004 Population =	*7100*
Average =	***6975***

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Sep-03	0.00	0.465					0.000				
2-Sep-03	0.00	0.437					0.000				
3-Sep-03	0.00	0.428	138.0	0.071	68.0	0.035	0.000				
4-Sep-03	0.00	0.415					0.000				
5-Sep-03	0.00	0.421					0.000				
6-Sep-03	0.00	0.471					0.000				
7-Sep-03	0.09	0.512					0.000				
8-Sep-03	0.17	0.550					0.000				
9-Sep-03	0.51	0.597					0.000				
10-Sep-03	0.02	0.412	201.0	0.099	102.0	0.050	0.000				
11-Sep-03	0.00	0.449					0.000				
12-Sep-03	0.00	0.433					0.000				
13-Sep-03	0.00	0.436					0.000				
14-Sep-03	0.00	0.469					0.000				
15-Sep-03	0.00	0.485					0.000				
16-Sep-03	0.14	0.501					0.000				
17-Sep-03	0.00	0.469	189.0	0.106	105.0	0.059	0.000				
18-Sep-03	0.00	0.461					0.000				
19-Sep-03	0.00	0.436					0.000				
20-Sep-03	0.00	0.440					0.000				
21-Sep-03	0.00	0.470					0.000				
22-Sep-03	0.00	0.440					0.000				
23-Sep-03	0.00	0.432					0.000				
24-Sep-03	0.00	0.418	169.0	0.084	84.9	0.042	0.000				
25-Sep-03	0.00	0.405					0.000				
26-Sep-03	0.00	0.417					0.000				
27-Sep-03	0.00	0.422					0.000				
28-Sep-03	0.00	0.450					0.000				
29-Sep-03	0.00	0.442					0.000				
30-Sep-03	0.00	0.423					0.000				
Monthly Totals	0.93	13.606					0.000				
Monthly Avg.			174.3	0.090	90.0	0.047		0.0	0.000	0.0	0.000
Weekly Avg.			201.0	0.106	105.0	0.059		0.0	0.000	0.0	0.000

Sept '03 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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	2003 Population =	6850
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	*2004 Population =*	*7100*
From April 2003 to April 2004	**Average =**	***6975***

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Oct-03	0.00	0.420	265.0	0.133	163.0	0.082	0.000				
2-Oct-03	0.00	0.446					0.000				
3-Oct-03	0.00	0.422					0.000				
4-Oct-03	0.00	0.450					0.000				
5-Oct-03	0.00	0.471					0.000				
6-Oct-03	0.00	0.471					0.000				
7-Oct-03	0.53	0.462					0.000				
8-Oct-03	0.11	0.495	141.0	0.083	70.3	0.042	0.000				
9-Oct-03	0.04	0.477					0.000				
10-Oct-03	0.34	0.480					0.000				
11-Oct-03	0.23	0.576					0.000				
12-Oct-03	0.23	0.611					0.000				
13-Oct-03	0.00	0.468					0.000				
14-Oct-03	0.02	0.449					0.000				
15-Oct-03	0.25	0.591	210.0	0.148	130.0	0.092	0.000				
16-Oct-03	0.01	0.470					0.000				
17-Oct-03	0.00	0.423					0.000				
18-Oct-03	0.00	0.635					0.000				
19-Oct-03	0.70	0.682					0.000				
20-Oct-03	0.00	0.502					0.000				
21-Oct-03	0.00	0.458					0.000				
22-Oct-03	0.00	0.453	312.0	0.169	295.0	0.160	0.000				
23-Oct-03	0.00	0.437					0.000				
24-Oct-03	0.00	0.432					0.000				
25-Oct-03	0.00	0.428					0.000				
26-Oct-03	0.00	0.447					0.000				
27-Oct-03	0.00	0.429					0.000				
28-Oct-03	0.00	0.471					0.000				
29-Oct-03	0.15	0.443	142.0	0.075	48.5	0.026	0.000				
30-Oct-03	0.00	0.444					0.000				
31-Oct-03	0.00	0.414					0.000				
Monthly Totals	2.61	14.857					0.000				
Monthly Avg.			214.0	0.122	141.4	0.080		0.0	0.000	0.0	0.000
Weekly Avg.			312.0	0.169	295.0	0.160		0.0	0.000	0.0	0.000

Oct '03 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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	2003 Population =	6850
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	*2004 Population =*	*7100*
From April 2003 to April 2004	**Average =**	***6975***

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Nov-03	0.00	0.483					0.000				
2-Nov-03	0.20	0.686					0.000				
3-Nov-03	0.00	0.461					0.000				
4-Nov-03	0.00	0.447					0.000				
5-Nov-03	0.00	0.434	108.0	0.056	54.4	0.028	0.000				
6-Nov-03	0.00	0.440					0.000				
7-Nov-03	0.00	0.480					0.000				
8-Nov-03	0.00	0.520					0.000				
9-Nov-03	0.13	0.525					0.000				
10-Nov-03	0.00	0.449					0.000				
11-Nov-03	0.06	0.511					0.000				
12-Nov-03	0.00	0.474	242.0	0.137	139.0	0.079	1.352	10.9	0.018	16.0	0.026
13-Nov-03	0.00	0.605					1.920				
14-Nov-03	0.00	0.595					1.965				
15-Nov-03	0.23	0.691					1.892				
16-Nov-03	0.88	1.247					1.928				
17-Nov-03	0.13	0.875					1.710				
18-Nov-03	0.24	0.636					1.666				
19-Nov-03	0.79	1.114	59.6	0.079	50.9	0.068	1.666	5.0	0.010	9.0	0.018
20-Nov-03	0.29	0.800					1.666				
21-Nov-03	0.17	0.637					1.638				
22-Nov-03	0.00	0.653					1.608				
23-Nov-03	0.00	0.818					1.660				
24-Nov-03	0.28	0.667					1.575				
25-Nov-03	0.61	0.957	83.4	0.095	90.8	0.104	1.566	5.1	0.010	16.0	0.030
26-Nov-03	0.28	0.975					1.566				
27-Nov-03	0.00	0.768					1.566				
28-Nov-03	0.01	1.200					1.584				
29-Nov-03	0.79	1.350					1.584				
30-Nov-03	0.10	0.834					1.667				
Monthly Totals	5.19	21.332					31.779				
Monthly Avg.			123.3	0.092	83.8	0.070		7.0	0.012	13.7	0.025
Weekly Avg.			242.0	0.137	139.0	0.104		10.9	0.018	16.0	0.030

Nov '03 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	7.0	***30***	10.9	***45***	N/A	**N/A**
TSS (mg/l)	13.7	***50***	16.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	86.3	***500***	123	***750***	123	***1000***
TSS (lb/day)	171.5	***830***	209	***1200***	209	***1700***
BOD_5 Removal	94%	***85% Monthly Avg.***				
TSS Removal	84%	***65% Monthly Avg.***				

CITY OF INDEPENDENCE, OREGON
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	2003 Population =	6850
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	*2004 Population =*	*7100*
From April 2003 to April 2004	**Average =**	***6975***

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Dec-03	0.05	0.807					1.650				
2-Dec-03	0.10	0.866					1.702				
3-Dec-03	0.24	0.771	81.7	0.075	56.7	0.052	1.690	7.8	0.016	19.5	0.039
4-Dec-03	0.16	0.945					1.690				
5-Dec-03	0.52	1.370					1.550				
6-Dec-03	0.59	1.070					1.575				
7-Dec-03	1.00	1.733					1.589				
8-Dec-03	0.02	1.009					1.589				
9-Dec-03	0.26	1.417					1.624				
10-Dec-03	0.28	1.217	96.3	0.140	62.5	0.091	1.834	6.6	0.014	23.8	0.052
11-Dec-03	0.05	1.193					1.645				
12-Dec-03	0.35	1.271					1.005				
13-Dec-03	1.36	4.400					1.692				
14-Dec-03	0.75	2.372					1.719				
15-Dec-03	0.00	1.297					1.674				
16-Dec-03	0.16	1.149					1.658				
17-Dec-03	0.03	1.005	126.0	0.151	106.0	0.127	1.679	8.9	0.018	22.7	0.046
18-Dec-03	0.00	0.951					1.656				
19-Dec-03	0.11	0.924					1.648				
20-Dec-03	0.00	0.991					1.663				
21-Dec-03	0.26	0.869					1.684				
22-Dec-03	0.00	0.885	71.0	0.075	32.8	0.035	1.686	13.5	0.027	25.7	0.052
23-Dec-03	0.01	1.078					1.709				
24-Dec-03	0.95	2.342					2.124				
25-Dec-03	0.00	1.491					2.160				
26-Dec-03	0.64	1.231					2.129				
27-Dec-03	0.56	2.093					2.167				
28-Dec-03	0.72	2.631					2.197				
29-Dec-03	0.90	2.268	26.8	0.073	11.6	0.031	2.848	7.8	0.027	19.3	0.066
30-Dec-03	0.00	1.574					2.164				
31-Dec-03	0.28	2.340					2.157				
Monthly Totals	10.35	45.560					55.557				
Monthly Avg.			80.4	0.103	53.9	0.067		8.9	0.020	22.2	0.051
Weekly Avg.			126.0	0.151	106.0	0.127		13.5	0.027	25.7	0.066

Dec '03 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	8.9	***30***	13.5	***45***	N/A	**N/A**
TSS (mg/l)	22.2	***50***	25.7	***80***	N/A	**N/A**
BOD_5 (lb/day)	142.1	***500***	190	***750***	190	***1000***
TSS (lb/day)	355.3	***830***	458	***1200***	458	***1700***
BOD_5 Removal	89%	***85% Monthly Avg.***				
TSS Removal	59%	***65% Monthly Avg.***				

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	2003 Population =	6850
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	*2004 Population =*	*7100*
From April 2003 to April 2004	**Average =**	***6975***

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jan-04	0.80	2.363					2.119				
2-Jan-04	0.10	2.386					2.165				
3-Jan-04	0.11	1.995					2.109				
4-Jan-04	0.11	1.733					2.149				
5-Jan-04	0.02	1.184					2.148				
6-Jan-04	0.64	1.357					2.900				
7-Jan-04	0.79	2.257	43.0	0.116	33.3	0.090	2.956	7.1	0.025	19.8	0.070
8-Jan-04	0.44	3.088					2.937				
9-Jan-04	0.22	2.447					2.916				
10-Jan-04	0.09	2.081					2.885				
11-Jan-04	0.00	1.564					2.869				
12-Jan-04	0.04	1.369					2.848				
13-Jan-04	0.01	1.501					2.789				
14-Jan-04	0.19	1.548	75.3	0.139	71.7	0.133	2.780	12.0	0.040	7.4	0.025
15-Jan-04	0.02	1.312					2.717				
16-Jan-04	0.01	1.164					2.728				
17-Jan-04	0.00	1.156					2.691				
18-Jan-04	0.31	1.312					2.692				
19-Jan-04	0.06	1.187					2.719				
20-Jan-04	0.02	1.122					2.668				
21-Jan-04	0.00	1.115	137.0	0.183	149.0	0.199	2.617	11.7	0.037	12.4	0.039
22-Jan-04	0.00	1.197					2.602				
23-Jan-04	0.22	1.425					2.548				
24-Jan-04	0.16	1.349					2.583				
25-Jan-04	0.03	1.993					2.553				
26-Jan-04	0.00	1.968					2.538				
27-Jan-04	0.36	1.925					2.527				
28-Jan-04	0.22	1.814	71.1	0.154	92.9	0.201	2.531	9.1	0.028	15.0	0.045
29-Jan-04	0.71	3.151					2.514				
30-Jan-04	0.93	2.540					2.538				
31-Jan-04	0.41	2.050					2.515				
Monthly Totals	7.02	54.653					80.851				
Monthly Avg.			81.6	0.148	86.7	0.156		10.0	0.032	13.7	0.045
Weekly Avg.			137.0	0.183	149.0	0.201		12.0	0.040	19.8	0.070

Jan '04 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	10.0	***30***	12.0	***45***	N/A	**N/A**
TSS (mg/l)	13.7	***50***	19.8	***80***	N/A	**N/A**
BOD_5 (lb/day)	225.2	***500***	278	***750***	278	***1000***
TSS (lb/day)	311.7	***830***	488	***1200***	488	***1700***
BOD_5 Removal	88%	***85% Monthly Avg.***				
TSS Removal	84%	***65% Monthly Avg.***				

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	2003 Population =	6850
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	*2004 Population =*	*7100*
From April 2003 to April 2004	**Average =**	***6975***

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Feb-04	0.12	1.645					2.433				
2-Feb-04	0.33	1.452					1.644				
3-Feb-04	0.00	1.094					1.726				
4-Feb-04	0.05	0.928	87.8	0.097	109.0	0.121	1.679	9.3	0.019	7.2	0.014
5-Feb-04	0.00	0.827					1.690				
6-Feb-04	0.28	1.253					1.696				
7-Feb-04	0.21	1.023					1.699				
8-Feb-04	0.01	0.854					1.687				
9-Feb-04	0.00	0.748					1.712				
10-Feb-04	0.00	0.690					1.729				
11-Feb-04	0.00	0.639	126.0	0.096	112.0	0.086	1.696	3.1	0.006	14.0	0.028
12-Feb-04	0.00	0.614					1.728				
13-Feb-04	0.00	0.636					1.719				
14-Feb-04	0.00	0.834					1.723				
15-Feb-04	0.00	0.776					1.716				
16-Feb-04	1.40	2.245					1.687				
17-Feb-04	0.57	2.233					1.689				
18-Feb-04	0.39	1.515	71.6	0.130	66.7	0.121	1.709	3.0	0.006	18.0	0.037
19-Feb-04	0.02	1.017					1.663				
20-Feb-04	0.00	0.858					1.644				
21-Feb-04	0.00	0.786					1.631				
22-Feb-04	0.00	0.753					1.092				
23-Feb-04	0.01	0.689					1.114				
24-Feb-04	0.57	1.254					1.105				
25-Feb-04	0.34	1.593	113.0	0.215	141.0	0.269	1.091	3.9	0.005	15.6	0.020
26-Feb-04	0.68	1.353					1.078				
27-Feb-04	0.53	1.350					1.080				
28-Feb-04	0.00	1.016					1.080				
29-Feb-04	0.20	1.291					1.081				
Monthly Totals	5.71	31.966					45.021				
Monthly Avg.			99.6	0.135	107.2	0.149		4.8	0.009	13.7	0.025
Weekly Avg.			126.0	0.215	141.0	0.269		9.3	0.019	18.0	0.037

Feb '04 Effluent Summary

	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	4.8	***30***	9.3	***45***	N/A	**N/A**
TSS (mg/l)	13.7	***50***	18.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	63.1	***500***	130	***750***	130	***1000***
TSS (lb/day)	174.3	***830***	257	***1200***	257	***1700***
BOD_5 Removal	95%	***85% Monthly Avg.***				
TSS Removal	87%	***65% Monthly Avg.***				

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	2003 Population =	6850
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	*2004 Population =*	*7100*
From April 2003 to April 2004	**Average =**	***6975***

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Mar-04	0.29	1.062					1.118				
2-Mar-04	0.02	0.825					1.104				
3-Mar-04	0.09	0.824	112.0	0.110	120.0	0.118	1.136	7.9	0.011	21.0	0.029
4-Mar-04	0.07	0.755					1.147				
5-Mar-04	0.08	0.758					1.159				
6-Mar-04	0.00	0.676					1.163				
7-Mar-04	0.00	0.631					1.209				
8-Mar-04	0.00	0.592					1.203				
9-Mar-04	0.00	0.572					1.216				
10-Mar-04	0.00	0.555	245.0	0.163	184.0	0.122	1.231	10.7	0.016	22.0	0.032
11-Mar-04	0.00	0.544					1.229				
12-Mar-04	0.00	0.516					1.226				
13-Mar-04	0.00	0.529					1.185				
14-Mar-04	0.00	0.531					1.183				
15-Mar-04	0.00	0.518					1.209				
16-Mar-04	0.00	0.497					1.156				
17-Mar-04	0.00	0.496	403.0	0.239	502.0	0.298	1.139	10.4	0.014	13.5	0.018
18-Mar-04	0.00	0.531					1.149				
19-Mar-04	0.17	0.498					1.149				
20-Mar-04	0.00	0.486					1.067				
21-Mar-04	0.00	0.476					1.078				
22-Mar-04	0.00	0.463					1.081				
23-Mar-04	0.00	0.482					1.028				
24-Mar-04	0.22	0.548	204.0	0.134	194.0	0.127	1.006	11.4	0.014	8.3	0.010
25-Mar-04	0.27	0.787					0.982				
26-Mar-04	0.40	0.691					0.972				
27-Mar-04	0.25	0.593					0.970				
28-Mar-04	0.00	0.549					0.969				
29-Mar-04	0.00	0.503					0.964				
30-Mar-04	0.06	0.578					0.917				
31-Mar-04	0.00	0.513					0.907				
Monthly Totals	1.92	18.579					34.252				
Monthly Avg.			241.0	0.161	250.0	0.166		10.1	0.014	16.2	0.022
Weekly Avg.			403.0	0.239	502.0	0.298		11.4	0.016	22.0	0.032

March '04 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	10.1	***30***	11.4	***45***	N/A	**N/A**
TSS (mg/l)	16.2	***50***	22.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	94.8	***500***	110	***750***	110	***1000***
TSS (lb/day)	155.7	***830***	226	***1200***	226	***1700***
BOD_5 Removal	96%	***85% Monthly Avg.***				
TSS Removal	94%	***65% Monthly Avg.***				

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 2003 to April 2004

2003 Population =	6850
2004 Population =	*7100*
Average =	***6975***

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Apr-04	0.00	0.474	177.0	0.100	208.0	0.118	0.884	24.1	0.025	12.9	0.014
2-Apr-04	0.00	0.514					0.905				
3-Apr-04	0.00	0.517					0.888				
4-Apr-04	0.00	0.529					0.842				
5-Apr-04	0.00	0.487					0.000				
6-Apr-04	0.00	0.470					0.000				
7-Apr-04	0.00	0.472	234.0	0.132	366.0	0.207	0.000				
8-Apr-04	0.00	0.444					0.000				
9-Apr-04	0.00	0.432					0.000				
10-Apr-04	0.00	0.465					0.000				
11-Apr-04	0.00	0.456					0.000				
12-Apr-04	0.00	0.465					0.000				
13-Apr-04	0.03	0.547					0.000				
14-Apr-04	0.52	0.953	219.0	0.250	295.0	0.336	0.000				
15-Apr-04	0.44	0.826					0.000				
16-Apr-04	0.18	0.698					0.000				
17-Apr-04	0.00	0.624					0.000				
18-Apr-04	0.00	0.710					0.000				
19-Apr-04	0.42	0.833					0.000				
20-Apr-04	0.82	1.499					0.000				
21-Apr-04	0.16	1.089	83.7	0.109	109.0	0.142	0.000				
22-Apr-04	0.00	0.735					0.000				
23-Apr-04	0.02	0.627					0.000				
24-Apr-04	0.00	0.595					0.000				
25-Apr-04	0.00	0.587					0.000				
26-Apr-04	0.00	0.537					0.000				
27-Apr-04	0.00	0.535					0.000				
28-Apr-04	0.00	0.515	216.0	0.133	296.0	0.182	0.000				
29-Apr-04	0.00	0.512					0.000				
30-Apr-04	0.00	0.484					0.000				
Monthly Totals	2.59	18.631					3.519				
Monthly Avg.			185.9	0.145	254.8	0.197		24.1	0.025	12.9	0.014
Weekly Avg.			234.0	0.250	366.0	0.336		24.1	0.025	12.9	0.014

Ap '04 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	24.1	***30***	24.1	***45***	N/A	**N/A**
TSS (mg/l)	12.9	***50***	12.9	***80***	N/A	**N/A**
BOD_5 (lb/day)	177.7	***500***	178	***750***	178	***1000***
TSS (lb/day)	95.1	***830***	95	***1200***	95	***1700***
BOD_5 Removal	87%	***85% Monthly Avg.***				
TSS Removal	95%	***65% Monthly Avg.***				

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	2002 Population =	6580
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2003 Population =	6850
From April 2002 to April 2003	**Average Population =**	**6715**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Apr-02	0.00	0.771					1.741				
2-Apr-02	0.00	0.770					1.741				
3-Apr-02	0.00	0.764	34.2	0.032	32.0	0.030	1.741	14.1	0.030	28.0	0.061
4-Apr-02	0.00	0.736					1.650				
5-Apr-02	0.19	0.844					1.650				
6-Apr-02	0.00	0.779					1.650				
7-Apr-02	0.01	0.837					1.650				
8-Apr-02	0.00	0.815					1.650				
9-Apr-02	0.56	1.158					1.650				
10-Apr-02	0.35	0.926	63.1	0.073	57.0	0.066	1.561	3.4	0.007	19.5	0.038
11-Apr-02	0.16	0.881					1.561				
12-Apr-02	0.00	0.866					1.561				
13-Apr-02	0.31	1.033					1.561				
14-Apr-02	0.31	0.939					1.561				
15-Apr-02	0.03	0.877					1.561				
16-Apr-02	0.09	0.845					1.561				
17-Apr-02	0.09	1.039	36.4	0.047	54.5	0.070	1.561	3.6	0.007	15.5	0.030
18-Apr-02	0.10	0.929					1.561				
19-Apr-02	0.00	0.864					1.561				
20-Apr-02	0.00	0.872					1.561				
21-Apr-02	0.00	0.813					1.561				
22-Apr-02	0.00	0.775					1.561				
23-Apr-02	0.00	0.802					1.387				
24-Apr-02	0.00	0.798	32.0	0.032	19.5	0.019	1.387	3.0	0.005	9.0	0.016
25-Apr-02	0.00	0.739					1.387				
26-Apr-02	0.00	0.776					1.387				
27-Apr-02	0.04	0.786					1.387				
28-Apr-02	0.00	0.748					1.303				
29-Apr-02	0.00	0.710					1.303				
30-Apr-02	0.00	0.822					1.303				
Monthly Totals	2.24	25.314					46.260				
Monthly Avg.			41.4	0.046	40.8	0.046		6.0	0.012	18.0	0.036
Weekly Avg.			63.1	0.073	57.0	0.070		14.1	0.030	28.0	0.061

Ap '02 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	6.0	***30***	14.1	***45***	N/A	**N/A**
TSS (mg/l)	18.0	***50***	28.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	82.6	***500***	205	***750***	205	***1000***
TSS (lb/day)	241.6	***830***	407	***1200***	407	***1700***
BOD_5 Removal	85%	***85% Monthly Avg.***				
TSS Removal	56%	***65% Monthly Avg.***				

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 2002 to April 2003

2002 Population =	6580
2003 Population =	6850
Average Population =	**6715**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-May-02	0.00	0.763	53.7	0.051	46.0	0.044	1.303	3.7	0.006	13.3	0.022
2-May-02	0.00	0.835					1.303				
3-May-02	0.00	0.794					1.221				
4-May-02	0.00	0.768					1.221				
5-May-02	0.00	0.777					1.221				
6-May-02	0.02	0.799					1.183				
7-May-02	0.00	0.837					1.183				
8-May-02	0.00	0.782	200.4	0.195	141.0	0.137	1.183	7.1	0.010	15.5	0.023
9-May-02	0.00	0.754					1.141				
10-May-02	0.00	0.820					1.141				
11-May-02	0.00	0.746					1.062				
12-May-02	0.00	0.782					1.062				
13-May-02	0.05	0.845					1.062				
14-May-02	0.00	0.771	73.8	0.071	36.0	0.034	1.062	3.0	0.004	7.3	0.010
15-May-02	0.00	0.750					0.986				
16-May-02	0.00	0.847					0.986				
17-May-02	0.32	0.782					0.986				
18-May-02	0.00	0.808					0.986				
19-May-02	0.28	0.935					0.986				
20-May-02	0.28	0.871					0.986				
21-May-02	0.06	0.779					0.986				
22-May-02	0.09	0.799	134.9	0.134	140.0	0.139	0.000				
23-May-02	0.00	0.759					0.000				
24-May-02	0.00	0.733					0.000				
25-May-02	0.00	0.737					0.000				
26-May-02	0.00	0.738					0.000				
27-May-02	0.12	0.913					0.000				
28-May-02	0.16	1.127					0.000				
29-May-02	0.22	0.938	134.4	0.157	193.8	0.226	0.000				
30-May-02	0.00	0.831					0.000				
31-May-02	0.00	0.777					0.000				
Monthly Totals	1.60	25.197					23.250				
Monthly Avg.			119.4	0.121	111.4	0.116		4.6	0.007	12.0	0.018
Weekly Avg.			200.4	0.195	193.8	0.226		7.1	0.010	15.5	0.023

May '02 Effluent Summary

	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	4.6	***30***	7.1	***45***	N/A	**N/A**
TSS (mg/l)	12.0	***50***	15.5	***80***	N/A	**N/A**
BOD_5 (lb/day)	45.6	***500***	70	***750***	70	***1000***
TSS (lb/day)	120.7	***830***	153	***1200***	153	***1700***
BOD_5 Removal	96%	***85% Monthly Avg.***				
TSS Removal	89%	***65% Monthly Avg.***				

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 2002 to April 2003

2002 Population =	6580
2003 Population =	6850
Average Population =	**6715**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jun-02	0.00	0.781					0.000				
2-Jun-02	0.00	0.761					0.000				
3-Jun-02	0.00	0.720					0.000				
4-Jun-02	0.00	0.774					0.000				
5-Jun-02	0.00	0.817					0.000				
6-Jun-02	0.00	0.781	45.5	0.044	37.0	0.036	0.000				
7-Jun-02	0.00	0.826					0.000				
8-Jun-02	0.26	0.851					0.000				
9-Jun-02	0.00	0.861					0.000				
10-Jun-02	0.00	0.785					0.000				
11-Jun-02	0.00	0.746	99.2	0.092	70.0	0.065	0.000				
12-Jun-02	0.00	0.750					0.000				
13-Jun-02	0.00	0.748					0.000				
14-Jun-02	0.00	0.805					0.000				
15-Jun-02	0.00	0.752					0.000				
16-Jun-02	0.00	0.857					0.000				
17-Jun-02	0.13	0.923					0.000				
18-Jun-02	0.12	0.871					0.000				
19-Jun-02	0.00	0.810	144.9	0.146	89.0	0.090	0.000				
20-Jun-02	0.00	0.807					0.000				
21-Jun-02	0.00	0.735					0.000				
22-Jun-02	0.00	0.744					0.000				
23-Jun-02	0.00	0.714					0.000				
24-Jun-02	0.00	0.710					0.000				
25-Jun-02	0.00	0.733					0.000				
26-Jun-02	0.00	0.730	160.2	0.145	120.0	0.109	0.000				
27-Jun-02	0.00	0.807					0.000				
28-Jun-02	0.25	1.060					0.000				
29-Jun-02	0.25	0.845					0.000				
30-Jun-02	0.25	0.787					0.000				
Monthly Totals	1.26	23.891					0.000				
Monthly Avg.			112.5	0.107	79.0	0.075		0.0	0.000	0.0	0.000
Weekly Avg.			160.2	0.146	120.0	0.109		0.0	0.000	0.0	0.000

June '02 Effluent Summary

	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 2002 to April 2003

2002 Population =	6580
2003 Population =	6850
Average Population =	**6715**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jul-02	0.00	0.734					0.000				
2-Jul-02	0.00	0.761	74.1	0.070	130.0	0.123	0.000				
3-Jul-02	0.00	0.697					0.000				
4-Jul-02	0.00	0.783					0.000				
5-Jul-02	0.00	0.733					0.000				
6-Jul-02	0.00	0.753					0.000				
7-Jul-02	0.00	0.749					0.000				
8-Jul-02	0.03	0.744					0.000				
9-Jul-02	0.00	0.713					0.000				
10-Jul-02	0.00	0.780	69.6	0.067	44.0	0.043	0.000				
11-Jul-02	0.00	0.751					0.000				
12-Jul-02	0.00	0.744					0.000				
13-Jul-02	0.00	0.767					0.000				
14-Jul-02	0.00	0.702					0.000				
15-Jul-02	0.00	0.734					0.000				
16-Jul-02	0.00	0.671					0.000				
17-Jul-02	0.00	0.763	73.4	0.070	98.0	0.093	0.000				
18-Jul-02	0.00	0.732					0.000				
19-Jul-02	0.00	0.728					0.000				
20-Jul-02	0.00	0.728					0.000				
21-Jul-02	0.00	0.768					0.000				
22-Jul-02	0.00	0.714					0.000				
23-Jul-02	0.00	0.709					0.000				
24-Jul-02	0.00	0.719	100.7	0.090	67.0	0.060	0.000				
25-Jul-02	0.00	0.720					0.000				
26-Jul-02	0.00	0.784					0.000				
27-Jul-02	0.00	0.723					0.000				
28-Jul-02	0.00	0.749					0.000				
29-Jul-02	0.00	0.739					0.000				
30-Jul-02	0.00	0.739					0.000				
31-Jul-02	0.00	0.765					0.000				
Monthly Totals	0.03	22.896					0.000				
Monthly Avg.			79.5	0.074	84.8	0.080		0.0	0.000	0.0	0.000
Weekly Avg.			100.7	0.090	130.0	0.123		0.0	0.000	0.0	0.000

July '02 Effluent Summary

	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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	2002 Population =	6580
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2003 Population =	6850
From April 2002 to April 2003	**Average Population =**	**6715**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Aug-02	0.00	0.752	127.2	0.119	80.0	0.075	0.000				
2-Aug-02	0.00	0.706					0.000				
3-Aug-02	0.00	0.695					0.000				
4-Aug-02	0.07	0.757					0.000				
5-Aug-02	0.03	0.756					0.000				
6-Aug-02	0.00	0.695					0.000				
7-Aug-02	0.00	0.723	137.6	0.124	67.0	0.060	0.000				
8-Aug-02	0.00	0.693					0.000				
9-Aug-02	0.00	0.497					0.000				
10-Aug-02	0.00	0.727					0.000				
11-Aug-02	0.00	0.787					0.000				
12-Aug-02	0.00	0.728					0.000				
13-Aug-02	0.00	0.797					0.000				
14-Aug-02	0.00	0.721	48.8	0.044	62.0	0.056	0.000				
15-Aug-02	0.00	0.700					0.000				
16-Aug-02	0.00	0.653					0.000				
17-Aug-02	0.00	0.664					0.000				
18-Aug-02	0.00	0.618					0.000				
19-Aug-02	0.00	0.681					0.000				
20-Aug-02	0.36	0.675					0.000				
21-Aug-02	0.00	0.684	286.5	0.243	92.0	0.078	0.000				
22-Aug-02	0.00	0.700					0.000				
23-Aug-02	0.00	0.653					0.000				
24-Aug-02	0.00	1.302					0.000				
25-Aug-02	0.00	0.797					0.000				
26-Aug-02	0.00	0.729					0.000				
27-Aug-02	0.00	0.720	284.7	0.255	280.0	0.250	0.000				
28-Aug-02	0.00	0.798					0.000				
29-Aug-02	0.00	0.872					0.000				
30-Aug-02	0.00	0.931					0.000				
31-Aug-02	0.00	0.748					0.000				
Monthly Totals	0.46	22.959					0.000				
Monthly Avg.			177.0	0.157	116.2	0.104		0.0	0.000	0.0	0.000
Weekly Avg.			286.5	0.255	280.0	0.250		0.0	0.000	0.0	0.000

August '02 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 2002 to April 2003

2002 Population =	6580
2003 Population =	6850
Average Population =	**6715**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Sep-02	0.00	0.702					0.000				
2-Sep-02	0.00	0.752					0.000				
3-Sep-02	0.00	0.779					0.000				
4-Sep-02	0.00	0.684	195.3	0.166	156.0	0.133	0.000				
5-Sep-02	0.00	0.727					0.000				
6-Sep-02	0.01	0.740					0.000				
7-Sep-02	0.07	0.717					0.000				
8-Sep-02	0.00	0.702					0.000				
9-Sep-02	0.00	0.659					0.000				
10-Sep-02	0.00	0.728					0.000				
11-Sep-02	0.00	0.633	84.1	0.066	46.0	0.036	0.000				
12-Sep-02	0.00	0.741					0.000				
13-Sep-02	0.00	0.678					0.000				
14-Sep-02	0.00	0.723					0.000				
15-Sep-02	0.00	0.732					0.000				
16-Sep-02	0.03	0.830					0.000				
17-Sep-02	0.36	0.795					0.000				
18-Sep-02	0.00	0.654	185.1	0.150	154.0	0.125	0.000				
19-Sep-02	0.00	0.754					0.000				
20-Sep-02	0.00	0.664					0.000				
21-Sep-02	0.00	0.655					0.000				
22-Sep-02	0.00	0.623					0.000				
23-Sep-02	0.00	0.637					0.000				
24-Sep-02	0.00	0.641					0.000				
25-Sep-02	0.00	0.615	288.3	0.220	138.0	0.105	0.000				
26-Sep-02	0.00	0.604					0.000				
27-Sep-02	0.00	0.638					0.000				
28-Sep-02	0.00	0.683					0.000				
29-Sep-02	0.15	0.735					0.000				
30-Sep-02	0.26	0.675					0.000				
Monthly Totals	0.88	20.900					0.000				
Monthly Avg.			188.2	0.151	123.5	0.100		0.0	0.000	0.0	0.000
Weekly Avg.			288.3	0.220	156.0	0.133		0.0	0.000	0.0	0.000

Sept '02 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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	2002 Population =	6580
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2003 Population =	6850
From April 2002 to April 2003	**Average Population =**	**6715**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Oct-02	0.00	0.733					0.000				
2-Oct-02	0.00	0.749	164.9	0.153	130.0	0.121	0.000				
3-Oct-02	0.23	0.798					0.000				
4-Oct-02	0.03	0.848					0.000				
5-Oct-02	0.00	0.753					0.000				
6-Oct-02	0.00	1.031					0.000				
7-Oct-02	0.00	0.839					0.000				
8-Oct-02	0.00	0.792					0.000				
9-Oct-02	0.00	0.768	123.6	0.118	73.0	0.070	0.000				
10-Oct-02	0.00	0.766					0.000				
11-Oct-02	0.00	0.738					0.000				
12-Oct-02	0.00	0.796					0.000				
13-Oct-02	0.00	0.813					0.000				
14-Oct-02	0.00	0.791					0.000				
15-Oct-02	0.00	0.811					0.000				
16-Oct-02	0.00	0.736	128.9	0.118	98.0	0.090	0.000				
17-Oct-02	0.00	0.754					0.000				
18-Oct-02	0.00	0.735					0.000				
19-Oct-02	0.00	0.789					0.000				
20-Oct-02	0.00	0.838					0.000				
21-Oct-02	0.28	0.806					0.000				
22-Oct-02	0.00	0.777					0.000				
23-Oct-02	0.00	0.772	135.9	0.130	154.0	0.148	0.000				
24-Oct-02	0.00	0.805					0.000				
25-Oct-02	0.00	0.734					0.000				
26-Oct-02	0.00	0.711					0.000				
27-Oct-02	0.01	0.831					0.000				
28-Oct-02	0.00	0.795					0.000				
29-Oct-02	0.00	0.741					0.000				
30-Oct-02	0.00	0.764	85.8	0.081	63.0	0.060	0.000				
31-Oct-02	0.00	0.711					0.000				
Monthly Totals	0.55	24.325					0.000				
Monthly Avg.			127.8	0.120	103.6	0.098		0.0	0.000	0.0	0.000
Weekly Avg.			164.9	0.153	154.0	0.148		0.0	0.000	0.0	0.000

Oct '02 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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	2002 Population =	6580
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2003 Population =	6850
From April 2002 to April 2003	**Average Population =**	**6715**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Nov-02	0.00	0.780					0.000				
2-Nov-02	0.00	0.787					0.000				
3-Nov-02	0.00	0.741					0.000				
4-Nov-02	0.00	0.724					0.000				
5-Nov-02	0.00	0.760					0.000				
6-Nov-02	0.08	0.818	166.4	0.169	67.0	0.068	0.000				
7-Nov-02	0.10	1.123					0.000				
8-Nov-02	0.89	1.018					0.000				
9-Nov-02	1.05	1.511					0.000				
10-Nov-02	0.37	1.147					0.000				
11-Nov-02	0.36	1.130					0.000				
12-Nov-02	0.37	1.079					0.000				
13-Nov-02	0.19	1.050	57.5	0.075	58.0	0.076	0.000				
14-Nov-02	0.20	0.928					0.000				
15-Nov-02	0.00	0.846					0.000				
16-Nov-02	0.24	0.990					0.000				
17-Nov-02	0.05	0.915					0.000				
18-Nov-02	0.06	0.828					0.000				
19-Nov-02	0.02	0.830					0.000				
20-Nov-02	0.00	0.806	69.9	0.070	66.0	0.066	0.000				
21-Nov-02	0.00	0.822					0.000				
22-Nov-02	0.02	0.843					0.000				
23-Nov-02	0.00	0.906					0.000				
24-Nov-02	0.21	0.896					0.000				
25-Nov-02	0.00	0.827					0.000				
26-Nov-02	0.00	0.847	235.8	0.248	328.4	0.345	0.000				
27-Nov-02	0.00	0.783					0.000				
28-Nov-02	0.00	0.759					0.000				
29-Nov-02	0.00	0.753					0.000				
30-Nov-02	0.00	0.749					0.000				
Monthly Totals	4.21	26.996					0.000				
Monthly Avg.			132.4	0.141	129.9	0.139		0.0	0.000	0.0	0.000
Weekly Avg.			235.8	0.248	328.4	0.345		0.0	0.000	0.0	0.000

Nov '02 Effluent Summary	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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	2002 Population =	6580
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2003 Population =	6850
From April 2002 to April 2003	**Average Population =**	**6715**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Dec-02	0.00	0.825					0.000				
2-Dec-02	0.00	0.797					0.000				
3-Dec-02	0.00	0.806					0.000				
4-Dec-02	0.28	0.943	7.6	0.009	37.3	0.044	0.000	30.3	0.000	16.7	0.000
5-Dec-02	0.02	0.825					2.000				
6-Dec-02	0.00	0.797					2.000				
7-Dec-02	0.00	0.840					1.875				
8-Dec-02	0.00	0.787					1.741				
9-Dec-02	0.03	0.924					2.000				
10-Dec-02	0.73	0.993					2.000				
11-Dec-02	0.98	1.492	58.2	0.108	23.3	0.043	2.000	5.7	0.014	17.0	0.042
12-Dec-02	0.61	1.958					2.000				
13-Dec-02	0.63	1.589					2.000				
14-Dec-02	0.63	1.761					2.000				
15-Dec-02	1.00	2.308					2.000				
16-Dec-02	1.53	1.947					2.000				
17-Dec-02	0.19	1.583					2.000				
18-Dec-02	0.30	1.410	62.5	0.109	35.0	0.061	2.000	4.1	0.010	13.0	0.032
19-Dec-02	0.28	1.238					2.000				
20-Dec-02	0.15	2.292					2.221				
21-Dec-02	0.35	1.995					2.221				
22-Dec-02	0.34	1.492					2.221				
23-Dec-02	0.03	1.232					2.221				
24-Dec-02	0.12	1.429					2.221				
25-Dec-02	0.14	2.376					2.221				
26-Dec-02	0.14	4.331	13.3	0.072	29.3	0.158	2.221	3.7	0.010	16.0	0.044
27-Dec-02	1.15	5.414					2.221				
28-Dec-02	0.26	5.837					2.221				
29-Dec-02	0.25	5.228					2.221				
30-Dec-02	1.52	7.024					3.000				
31-Dec-02	1.00	3.982					4.000				
Monthly Totals	12.66	66.455					58.826				
Monthly Avg.			35.4	0.074	31.2	0.076		11.0	0.009	15.7	0.030
Weekly Avg.			62.5	0.109	37.3	0.158		30.3	0.014	17.0	0.044

Dec '02 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	11.0	***30***	30.3	***45***	N/A	**N/A**
TSS (mg/l)	15.7	***50***	17.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	58.0	***500***	95	***750***	95	***1000***
TSS (lb/day)	199.2	***830***	296	***1200***	296	***1700***
BOD_5 Removal	69%	***85% Monthly Avg.***				
TSS Removal	50%	***65% Monthly Avg.***				

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 2002 to April 2003

2002 Population =	6580
2003 Population =	6850
Average Population =	**6715**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jan-03	0.15	1.721					4.000				
2-Jan-03	0.56	1.921	35.4	0.084	13.5	0.032	4.000	6.2	0.031	15.0	0.075
3-Jan-03	0.63	1.702					4.000				
4-Jan-03	0.64	2.587					4.000				
5-Jan-03	0.37	1.515					4.000				
6-Jan-03	0.00	1.143					3.765				
7-Jan-03	0.00	1.338					3.765				
8-Jan-03	0.00	1.834	70.3	0.160	78.0	0.178	3.765	5.3	0.025	16.5	0.077
9-Jan-03	0.00	1.603					3.765				
10-Jan-03	0.00	1.208					3.765				
11-Jan-03	0.00	2.014					3.645				
12-Jan-03	1.55	5.206					3.645				
13-Jan-03	0.75	4.986					3.645				
14-Jan-03	0.06	5.145					3.310				
15-Jan-03	0.00	5.416	66.8	0.449	64.5	0.434	3.182	6.5	0.026	18.5	0.073
16-Jan-03	0.00	4.516					2.024				
17-Jan-03	0.00	2.191					2.024				
18-Jan-03	0.00	3.102					2.024				
19-Jan-03	0.00	2.634					2.024				
20-Jan-03	0.00	1.868					1.221				
21-Jan-03	0.03	0.969					1.221				
22-Jan-03	0.65	1.355	108.0	0.182	130.0	0.219	1.221	12.8	0.019	22.7	0.034
23-Jan-03	0.14	1.136					1.221				
24-Jan-03	0.34	1.347					1.221				
25-Jan-03	0.32	1.650					1.221				
26-Jan-03	0.33	1.717					1.221				
27-Jan-03	0.00	1.175					1.221				
28-Jan-03	0.00	1.065					1.221				
29-Jan-03	0.55	2.721	31.8	0.107	62.0	0.210	1.221	5.7	0.009	18.0	0.027
30-Jan-03	1.12	4.081					1.221				
31-Jan-03	1.59	4.958					1.221				
Monthly Totals	9.78	75.824					79.000				
Monthly Avg.			62.5	0.197	69.6	0.214		7.3	0.022	18.1	0.057
Weekly Avg.			108.0	0.449	130.0	0.434		12.8	0.031	22.7	0.077

Jan '03 Effluent Summary

	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	7.3	***30***	12.8	***45***	N/A	**N/A**
TSS (mg/l)	18.1	***50***	22.7	***80***	N/A	**N/A**
BOD_5 (lb/day)	146.8	***500***	207	***750***	207	***1000***
TSS (lb/day)	384.8	***830***	518	***1200***	518	***1700***
BOD_5 Removal	88%	***85% Monthly Avg.***				
TSS Removal	74%	***65% Monthly Avg.***				

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 2002 to April 2003

2002 Population =	6580
2003 Population =	6850
Average Population =	**6715**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Feb-03	0.10	2.012					2.290				
2-Feb-03	0.08	1.442					2.290				
3-Feb-03	0.00	1.170					2.290				
4-Feb-03	0.00	1.147					2.221				
5-Feb-03	0.00	1.075	79.8	0.107	83.2	0.111	2.221	7.2	0.020	21.1	0.058
6-Feb-03	0.00	1.085					2.221				
7-Feb-03	0.00	1.076					2.221				
8-Feb-03	0.00	1.672					2.221				
9-Feb-03	0.00	0.958					2.221				
10-Feb-03	0.00	1.017					2.221				
11-Feb-03	0.00	0.939					1.387				
12-Feb-03	0.00	0.951	58.9	0.070	37.0	0.044	1.387	9.9	0.017	14.0	0.024
13-Feb-03	0.00	0.958					1.387				
14-Feb-03	0.02	0.904					1.387				
15-Feb-03	0.48	1.386					1.387				
16-Feb-03	0.48	1.647					1.387				
17-Feb-03	0.97	2.929					1.387				
18-Feb-03	0.35	1.691					1.387				
19-Feb-03	0.24	1.575	106.0	0.207	101.0	0.198	1.387	7.5	0.013	26.0	0.045
20-Feb-03	0.02	1.333					1.387				
21-Feb-03	0.00	1.254					1.387				
22-Feb-03	0.00	1.124					1.387				
23-Feb-03	0.00	1.093					1.387				
24-Feb-03	0.00	0.974					1.387				
25-Feb-03	0.00	0.863					1.387				
26-Feb-03	0.00	0.882	130.6	0.143	87.0	0.095	1.303	8.7	0.014	32.0	0.052
27-Feb-03	0.00	0.828					1.303				
28-Feb-03	0.12	0.911					1.303				
Monthly Totals	2.86	34.896					47.131				
Monthly Avg.			93.8	0.132	77.1	0.112		8.3	0.016	23.3	0.045
Weekly Avg.			130.6	0.207	101.0	0.198		9.9	0.020	32.0	0.058

Feb '03 Effluent Summary

	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	8.3	***30***	9.9	***45***	N/A	**N/A**
TSS (mg/l)	23.3	***50***	32.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	107.4	***500***	133	***750***	133	***1000***
TSS (lb/day)	300.3	***830***	391	***1200***	391	***1700***
BOD_5 Removal	91%	***85% Monthly Avg.***				
TSS Removal	70%	***65% Monthly Avg.***				

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	2002 Population =	6580
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2003 Population =	6850
From April 2002 to April 2003	**Average Population =**	**6715**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Mar-03	0.00	0.887					1.303				
2-Mar-03	0.19	1.019					1.303				
3-Mar-03	0.13	0.934					1.303				
4-Mar-03	0.01	0.915					1.303				
5-Mar-03	0.01	0.945	83.0	0.097	51.5	0.060	1.303	13.7	0.022	33.3	0.054
6-Mar-03	0.06	1.171					1.303				
7-Mar-03	1.01	2.326					1.303				
8-Mar-03	0.28	2.051					1.303				
9-Mar-03	0.72	2.032					1.303				
10-Mar-03	0.04	1.310					1.303				
11-Mar-03	0.00	1.129					1.303				
12-Mar-03	0.22	1.048	73.3	0.095	74.7	0.097	1.303	7.2	0.012	28.7	0.046
13-Mar-03	0.21	1.058					1.303				
14-Mar-03	0.61	1.471					1.303				
15-Mar-03	0.18	1.344					1.303				
16-Mar-03	0.17	1.132					1.303				
17-Mar-03	0.27	1.013					1.303				
18-Mar-03	0.00	0.970					1.303				
19-Mar-03	0.36	1.139	53.9	0.076	58.0	0.082	1.303	6.9	0.011	24.0	0.039
20-Mar-03	0.16	1.114					1.303				
21-Mar-03	0.81	2.430					1.303				
22-Mar-03	0.73	2.491					1.303				
23-Mar-03	0.44	1.523					1.303				
24-Mar-03	0.00	1.217					1.303				
25-Mar-03	0.07	1.206					1.303				
26-Mar-03	0.21	1.075	94.8	0.127	59.5	0.079	1.303	5.9	0.010	12.0	0.019
27-Mar-03	0.27	1.242					1.387				
28-Mar-03	0.00	1.081					1.500				
29-Mar-03	0.00	0.976					1.500				
30-Mar-03	0.00	1.002					1.500				
31-Mar-03	0.02	1.022					1.561				
Monthly Totals	7.18	40.273					41.326				
Monthly Avg.			76.3	0.099	60.9	0.080		8.4	0.014	24.5	0.040
Weekly Avg.			94.8	0.127	74.7	0.097		13.7	0.022	33.3	0.054

March '03 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	8.4	***30***	13.7	***45***	N/A	**N/A**
TSS (mg/l)	24.5	***50***	33.3	***80***	N/A	**N/A**
BOD_5 (lb/day)	91.7	***500***	149	***750***	149	***1000***
TSS (lb/day)	266.2	***830***	362	***1200***	362	***1700***
BOD_5 Removal	89%	***85% Monthly Avg.***				
TSS Removal	60%	***65% Monthly Avg.***				

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	2002 Population =	6580
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2003 Population =	6850
From April 2002 to April 2003	**Average Population =**	**6715**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Apr-03	0.09	0.951					1.561				
2-Apr-03	0.16	1.081	105.5	0.142	108.0	0.145	1.561	4.1	0.008	10.7	0.021
3-Apr-03	0.65	1.435					1.561				
4-Apr-03	0.30	1.420					1.561				
5-Apr-03	0.00	1.406					1.561				
6-Apr-03	0.59	1.357					1.561				
7-Apr-03	0.02	0.803					1.561				
8-Apr-03	0.00	1.003					1.561				
9-Apr-03	0.00	0.969	81.2	0.098	64.0	0.077	1.561	4.2	0.008	3.3	0.006
10-Apr-03	0.07	1.036					1.561				
11-Apr-03	0.10	1.082					1.561				
12-Apr-03	0.76	2.282					1.561				
13-Apr-03	0.57	1.671					1.561				
14-Apr-03	0.01	1.100					1.561				
15-Apr-03	0.25	0.795					1.561				
16-Apr-03	0.05	0.757	142.2	0.134	82.7	0.078	1.387	8.4	0.014	4.0	0.007
17-Apr-03	0.13	0.702					1.387				
18-Apr-03	0.02	0.612					1.339				
19-Apr-03	0.00	0.608					1.339				
20-Apr-03	0.00	0.995					1.339				
21-Apr-03	0.44	1.161					1.700				
22-Apr-03	0.00	0.770					1.700				
23-Apr-03	0.50	2.075	63.9	0.165	50.0	0.129	1.700	6.5	0.014	6.3	0.013
24-Apr-03	0.39	1.487					1.700				
25-Apr-03	0.09	1.099					1.650				
26-Apr-03	0.00	0.963					1.650				
27-Apr-03	0.00	0.792					1.650				
28-Apr-03	0.26	1.005					1.650				
29-Apr-03	0.21	0.776					1.650				
30-Apr-03	0.01	0.653	103.0	0.084	106.0	0.086	1.650	1.6	0.003	3.0	0.006
Monthly Totals	5.67	32.846					46.906				
Monthly Avg.			99.2	0.124	82.1	0.103		5.0	0.010	5.5	0.011
Weekly Avg.			142.2	0.165	108.0	0.145		8.4	0.014	10.7	0.021

Ap '03 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	5.0	***30***	8.4	***45***	N/A	**N/A**
TSS (mg/l)	5.5	***50***	10.7	***80***	N/A	**N/A**
BOD_5 (lb/day)	63.8	***500***	97	***750***	97	***1000***
TSS (lb/day)	71.8	***830***	139	***1200***	139	***1700***
BOD_5 Removal	95%	***85% Monthly Avg.***				
TSS Removal	93%	***65% Monthly Avg.***				

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 2001 to April 2002

2001 Population =	6400
2002 Population =	6580
Average =	**6490**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Apr-01	0.00	0.531					0.571				
2-Apr-01	0.15	0.495					0.571				
3-Apr-01	0.00	0.463					0.571				
4-Apr-01	0.00	0.429	164.0	0.090	212.0	0.117	0.571	19.3	0.014	41.3	0.030
5-Apr-01	0.00	0.438					0.571				
6-Apr-01	0.13	0.458					0.571				
7-Apr-01	0.00	0.451					0.571				
8-Apr-01	0.18	0.520					0.571				
9-Apr-01	0.01	0.455					0.571				
10-Apr-01	0.13	0.534					0.571				
11-Apr-01	0.06	0.446	39.3	0.023	40.0	0.023	0.571	24.3	0.018	56.7	0.042
12-Apr-01	0.02	0.456					0.571				
13-Apr-01	0.00	0.405					0.571				
14-Apr-01	0.00	0.438					0.571				
15-Apr-01	0.03	0.440					0.571				
16-Apr-01	0.00	0.414					0.571				
17-Apr-01	0.09	0.420					0.571				
18-Apr-01	0.01	0.407	54.6	0.029	49.0	0.026	0.571	8.9	0.007	17.5	0.013
19-Apr-01	0.02	0.408					0.571				
20-Apr-01	0.00	0.381					0.912				
21-Apr-01	0.00	0.395					0.912				
22-Apr-01	0.00	0.446					0.912				
23-Apr-01	0.09	0.442					0.912				
24-Apr-01	0.00	0.389					0.912				
25-Apr-01	0.00	0.397	165.3	0.084	152.0	0.078	0.912	10.8	0.013	11.0	0.013
26-Apr-01	0.00	0.381					0.912				
27-Apr-01	0.00	0.374					0.912				
28-Apr-01	0.00	0.420					0.912				
29-Apr-01	0.22	0.443					0.912				
30-Apr-01	0.30	0.637					0.912				
Monthly Totals	1.44	13.313					20.881				
Monthly Avg.			105.8	0.056	113.3	0.061		15.8	0.013	31.6	0.024
Weekly Avg.			165.3	0.090	212.0	0.117		24.3	0.018	56.7	0.042

Ap '01 Effluent Summary

	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	15.8	***30***	24.3	***45***	N/A	**N/A**
TSS (mg/l)	31.6	***50***	56.7	***80***	N/A	**N/A**
BOD_5 (lb/day)	83.0	***500***	116	***750***	116	***1000***
TSS (lb/day)	158.4	***830***	270	***1200***	270	***1700***
BOD_5 Removal	85%	***85% Monthly Avg.***				
TSS Removal	72%	***65% Monthly Avg.***				

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	2001 Population =	6400
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2002 Population =	6580
From April 2001 to April 2002	**Average =**	**6490**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-May-01	0.09	0.495					0.912				
2-May-01	0.00	0.410	77.7	0.041	140.0	0.074	0.912	3.0	0.004	13.3	0.016
3-May-01	0.00	0.401					0.912				
4-May-01	0.00	0.373					1.141				
5-May-01	0.00	0.386					1.141				
6-May-01	0.00	0.405					1.141				
7-May-01	0.00	0.441					1.141				
8-May-01	0.00	0.385					1.141				
9-May-01	0.00	0.412	192.0	0.102	182.0	0.096	1.141	3.0	0.004	7.3	0.011
10-May-01	0.00	0.380					1.141				
11-May-01	0.00	0.349					1.062				
12-May-01	0.00	0.360					1.062				
13-May-01	0.00	0.391					1.062				
14-May-01	1.14	1.020					1.303				
15-May-01	0.26	0.609					2.000				
16-May-01	0.21	0.490	60.9	0.038	88.0	0.055	2.000	3.0	0.008	12.5	0.032
17-May-01	0.00	0.442					2.000				
18-May-01	0.00	0.395					2.000				
19-May-01	0.00	0.398					2.000				
20-May-01	0.00	0.418					2.000				
21-May-01	0.00	0.385					2.000				
22-May-01	0.00	0.382					2.000				
23-May-01	0.00	0.385	194.1	0.096	240.0	0.119	1.741	3.1	0.007	6.5	0.015
24-May-01	0.00	0.388					1.650				
25-May-01	0.00	0.367					2.000				
26-May-01	0.00	0.355					1.387				
27-May-01	0.00	0.366					1.387				
28-May-01	0.03	0.410					1.387				
29-May-01	0.00	0.375					1.387				
30-May-01	0.00	0.363	148.5	0.069	268.0	0.125	1.387	16.7	0.030	33.3	0.059
31-May-01	0.00	0.369					2.000				
Monthly Totals	1.73	13.105					45.538				
Monthly Avg.			134.6	0.069	183.6	0.094		5.8	0.010	14.6	0.026
Weekly Avg.			194.1	0.102	268.0	0.125		16.7	0.030	33.3	0.059

May '01 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	5.8	***30***	16.7	***45***	N/A	**N/A**
TSS (mg/l)	14.6	***50***	33.3	***80***	N/A	**N/A**
BOD_5 (lb/day)	68.0	***500***	193	***750***	193	***1000***
TSS (lb/day)	171.7	***830***	385	***1200***	385	***1700***
BOD_5 Removal	96%	***85% Monthly Avg.***				
TSS Removal	92%	***65% Monthly Avg.***				

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 2001 to April 2002

2001 Population =	6400
2002 Population =	6580
Average =	**6490**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jun-01	0.01	0.358					0.000				
2-Jun-01	0.00	0.388					0.000				
3-Jun-01	0.00	0.412					0.000				
4-Jun-01	0.15	0.382					0.000				
5-Jun-01	0.21	0.449					0.000				
6-Jun-01	0.00	0.373	83.7	0.040	99.0	0.047	0.000				
7-Jun-01	0.00	0.366					0.000				
8-Jun-01	0.00	0.356					0.000				
9-Jun-01	0.00	0.377					0.000				
10-Jun-01	0.00	0.386					0.000				
11-Jun-01	0.04	0.515					0.000				
12-Jun-01	0.19	0.422					0.000				
13-Jun-01	0.00	0.384	183.6	0.091	198.0	0.098	0.000				
14-Jun-01	0.00	0.381					0.000				
15-Jun-01	0.00	0.366					0.000				
16-Jun-01	0.00	0.374					0.000				
17-Jun-01	0.00	0.391					0.000				
18-Jun-01	0.00	0.366					0.000				
19-Jun-01	0.00	0.360					0.000				
20-Jun-01	0.00	0.355	227.7	0.104	230.0	0.105	0.000				
21-Jun-01	0.00	0.378					0.000				
22-Jun-01	0.00	0.352					0.000				
23-Jun-01	0.00	0.356					0.000				
24-Jun-01	0.12	0.443					0.000				
25-Jun-01	0.02	0.323					0.000				
26-Jun-01	0.03	0.649					0.000				
27-Jun-01	1.53	0.815	132.2	0.138	137.0	0.143	0.000				
28-Jun-01	0.01	0.452					0.000				
29-Jun-01	0.00	0.406					0.000				
30-Jun-01	0.00	0.404					0.000				
Monthly Totals	2.31	12.339					0.000				
Monthly Avg.			156.8	0.093	166.0	0.098		0.0	0.000	0.0	0.000
Weekly Avg.			227.7	0.138	230.0	0.143		0.0	0.000	0.0	0.000

June '01 Effluent Summary

	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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	2001 Population =	6400
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2002 Population =	6580
From April 2001 to April 2002	**Average =**	**6490**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jul-01	0.00	0.411					0.000				
2-Jul-01	0.00	0.391					0.000				
3-Jul-01	0.00	0.396					0.000				
4-Jul-01	0.00	0.412	153.5	0.081	146.0	0.077	0.000				
5-Jul-01	0.00	0.382					0.000				
6-Jul-01	0.00	0.384					0.000				
7-Jul-01	0.00	0.373					0.000				
8-Jul-01	0.00	0.407					0.000				
9-Jul-01	0.00	0.394					0.000				
10-Jul-01	0.00	0.373					0.000				
11-Jul-01	0.00	0.373	97.4	0.047	75.5	0.036	0.000				
12-Jul-01	0.00	0.374					0.000				
13-Jul-01	0.00	0.385					0.000				
14-Jul-01	0.00	0.397					0.000				
15-Jul-01	0.00	0.396					0.000				
16-Jul-01	0.00	0.371					0.000				
17-Jul-01	0.00	0.372					0.000				
18-Jul-01	0.00	0.357	129.8	0.060	78.0	0.036	0.000				
19-Jul-01	0.00	0.359					0.000				
20-Jul-01	0.00	0.354					0.000				
21-Jul-01	0.00	0.359					0.000				
22-Jul-01	0.00	0.383					0.000				
23-Jul-01	0.00	0.364					0.000				
24-Jul-01	0.00	0.372					0.000				
25-Jul-01	0.00	0.355	143.4	0.065	119.0	0.054	0.000				
26-Jul-01	0.00	0.367					0.000				
27-Jul-01	0.00	0.356					0.000				
28-Jul-01	0.00	0.358					0.000				
29-Jul-01	0.07	0.407					0.000				
30-Jul-01	0.20	0.373					0.000				
31-Jul-01	0.00	0.364					0.000				
Monthly Totals	0.27	11.719					0.000				
Monthly Avg.			131.0	0.063	104.6	0.051		0.0	0.000	0.0	0.000
Weekly Avg.			153.5	0.081	146.0	0.077		0.0	0.000	0.0	0.000

July '01 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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	2001 Population =	6400
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2002 Population =	6580
From April 2001 to April 2002	**Average =**	**6490**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Aug-01	0.00	0.362	121.2	0.056	135.0	0.063	0.000				
2-Aug-01	0.00	0.373					0.000				
3-Aug-01	0.00	0.386					0.000				
4-Aug-01	0.00	0.369					0.000				
5-Aug-01	0.00	0.390					0.000				
6-Aug-01	0.00	0.365					0.000				
7-Aug-01	0.00	0.389					0.000				
8-Aug-01	0.00	0.388	55.8	0.028	80.0	0.040	0.000				
9-Aug-01	0.00	0.382					0.000				
10-Aug-01	0.00	0.364					0.000				
11-Aug-01	0.00	0.366					0.000				
12-Aug-01	0.00	0.384					0.000				
13-Aug-01	0.00	0.424					0.000				
14-Aug-01	0.00	0.365					0.000				
15-Aug-01	0.00	0.357	99.3	0.046	68.0	0.031	0.000				
16-Aug-01	0.00	0.357					0.000				
17-Aug-01	0.00	0.366					0.000				
18-Aug-01	0.00	0.361					0.000				
19-Aug-01	0.00	0.364					0.000				
20-Aug-01	0.00	0.367					0.000				
21-Aug-01	0.00	0.414					0.000				
22-Aug-01	0.70	0.992	16.7	0.021	18.0	0.023	0.000				
23-Aug-01	0.32	0.495					0.000				
24-Aug-01	0.00	0.451					0.000				
25-Aug-01	0.00	0.396					0.000				
26-Aug-01	0.00	0.381					0.000				
27-Aug-01	0.00	0.375					0.000				
28-Aug-01	0.00	0.382					0.000				
29-Aug-01	0.00	0.385	128.7	0.064	122.0	0.060	0.000				
30-Aug-01	0.00	0.370					0.000				
31-Aug-01	0.00	0.377					0.000				
Monthly Totals	1.02	12.497					0.000				
Monthly Avg.			84.3	0.043	84.6	0.043		0.0	0.000	0.0	0.000
Weekly Avg.			128.7	0.064	135.0	0.063		0.0	0.000	0.0	0.000

August '01 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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	2001 Population =	6400
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2002 Population =	6580
From April 2001 to April 2002	**Average =**	**6490**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Sep-01	0.00	0.362					0.000				
2-Sep-01	0.00	0.351					0.000				
3-Sep-01	0.00	0.406					0.000				
4-Sep-01	0.00	0.391					0.000				
5-Sep-01	0.00	0.376	240.3	0.116	84.0	0.041	0.000				
6-Sep-01	0.00	0.383					0.000				
7-Sep-01	0.00	0.355					0.000				
8-Sep-01	0.00	0.371					0.000				
9-Sep-01	0.00	0.404					0.000				
10-Sep-01	0.00	0.377					0.000				
11-Sep-01	0.00	0.362					0.000				
12-Sep-01	0.00	0.376	95.4	0.046	87.5	0.042	0.000				
13-Sep-01	0.00	0.361					0.000				
14-Sep-01	0.00	0.363					0.000				
15-Sep-01	0.10	0.379					0.000				
16-Sep-01	0.00	0.389					0.000				
17-Sep-01	0.00	0.395					0.000				
18-Sep-01	0.00	0.381					0.000				
19-Sep-01	0.00	0.378	148.2	0.072	89.0	0.043	0.000				
20-Sep-01	0.00	0.373					0.000				
21-Sep-01	0.00	0.362					0.000				
22-Sep-01	0.00	0.374					0.000				
23-Sep-01	0.00	0.396					0.000				
24-Sep-01	0.00	0.413					0.000				
25-Sep-01	0.17	0.539					0.000				
26-Sep-01	0.18	0.472	58.2	0.035	44.0	0.027	0.000				
27-Sep-01	0.00	0.392					0.000				
28-Sep-01	0.00	0.354					0.000				
29-Sep-01	0.00	0.364					0.000				
30-Sep-01	0.00	0.394					0.000				
Monthly Totals	0.45	11.593					0.000				
Monthly Avg.			135.5	0.067	76.1	0.038		0.0	0.000	0.0	0.000
Weekly Avg.			240.3	0.116	89.0	0.043		0.0	0.000	0.0	0.000

Sept '01 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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	2001 Population =	6400
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2002 Population =	6580
From April 2001 to April 2002	**Average =**	**6490**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Oct-01	0.00	0.367					0.000				
2-Oct-01	0.00	0.372					0.000				
3-Oct-01	0.00	0.379	255.9	0.125	324.0	0.158	0.000				
4-Oct-01	0.00	0.366					0.000				
5-Oct-01	0.00	0.352					0.000				
6-Oct-01	0.00	0.374					0.000				
7-Oct-01	0.00	0.397					0.000				
8-Oct-01	0.00	0.376					0.000				
9-Oct-01	0.00	0.329					0.000				
10-Oct-01	0.23	0.444	91.7	0.052	70.0	0.040	0.000				
11-Oct-01	0.03	0.377					0.000				
12-Oct-01	0.00	0.380					0.000				
13-Oct-01	0.00	0.381					0.000				
14-Oct-01	0.00	0.406					0.000				
15-Oct-01	0.00	0.368					0.000				
16-Oct-01	0.00	0.373					0.000				
17-Oct-01	0.00	0.364	174.6	0.082	132.0	0.062	0.000				
18-Oct-01	0.00	0.360					0.000				
19-Oct-01	0.00	0.368					0.000				
20-Oct-01	0.00	0.389					0.000				
21-Oct-01	0.07	0.414					0.000				
22-Oct-01	0.30	0.590					0.000				
23-Oct-01	0.21	0.474					0.000				
24-Oct-01	0.00	0.413	149.8	0.080	78.0	0.041	0.000				
25-Oct-01	0.00	0.381					0.000				
26-Oct-01	0.00	0.385					0.000				
27-Oct-01	0.35	0.590					0.000				
28-Oct-01	0.00	0.457					0.000				
29-Oct-01	0.11	0.697					0.000				
30-Oct-01	0.94	1.139					0.000				
31-Oct-01	0.36	0.748					0.000				
Monthly Totals	2.60	13.810					0.000				
Monthly Avg.			168.0	0.085	151.0	0.075		0.0	0.000	0.0	0.000
Weekly Avg.			255.9	0.125	324.0	0.158		0.0	0.000	0.0	0.000

Oct '01 Effluent Summary

	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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	2001 Population =	6400
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2002 Population =	6580
From April 2001 to April 2002	**Average =**	**6490**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Nov-01	0.17	0.644	37.5	0.031	57.0	0.047	0.000				
2-Nov-01	0.02	0.465					0.000				
3-Nov-01	0.00	0.449					0.000				
4-Nov-01	0.00	0.524					0.000				
5-Nov-01	0.08	0.464					0.000				
6-Nov-01	0.00	0.430					0.000				
7-Nov-01	0.00	0.408	135.3	0.071	138.0	0.072	0.000				
8-Nov-01	0.00	0.392					0.000				
9-Nov-01	0.00	0.416					0.000				
10-Nov-01	0.00	0.401					0.000				
11-Nov-01	0.02	0.438					0.000				
12-Nov-01	0.13	0.577					0.000				
13-Nov-01	0.64	0.633					0.000				
14-Nov-01	1.74	0.646	42.9	0.036	57.0	0.047	2.000	3.0	0.008	1.5	0.004
15-Nov-01	0.19	0.684					2.000				
16-Nov-01	0.08	0.668					2.000				
17-Nov-01	0.00	0.565					2.000				
18-Nov-01	0.00	0.587					2.000				
19-Nov-01	0.73	0.874					2.000				
20-Nov-01	0.35	0.749	67.7	0.065	123.0	0.118	2.000	12.3	0.032	5.3	0.014
21-Nov-01	0.63	1.688					2.000				
22-Nov-01	2.01	2.024					2.000				
23-Nov-01	0.14	1.056					2.000				
24-Nov-01	0.28	1.365					2.000				
25-Nov-01	0.27	1.101					2.000				
26-Nov-01	0.27	0.904					2.000				
27-Nov-01	0.00	1.019					2.000				
28-Nov-01	2.02	3.763	21.3	0.103	41.5	0.201	2.000	3.0	0.008	10.3	0.026
29-Nov-01	0.33	1.613					2.000				
30-Nov-01	1.01	2.528					2.000				
Monthly Totals	11.11	28.075					34.000				
Monthly Avg.			60.9	0.061	83.3	0.097		6.1	0.016	5.7	0.015
Weekly Avg.			135.3	0.103	138.0	0.201		12.3	0.032	10.3	0.026

Nov '01 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	6.1	***30***	12.3	***45***	N/A	**N/A**
TSS (mg/l)	5.7	***50***	10.3	***80***	N/A	**N/A**
BOD_5 (lb/day)	101.7	***500***	205	***750***	205	***1000***
TSS (lb/day)	95.1	***830***	172	***1200***	172	***1700***
BOD_5 Removal	90%	***85% Monthly Avg.***				
TSS Removal	93%	***65% Monthly Avg.***				

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	2001 Population =	6400
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2002 Population =	6580
From April 2001 to April 2002	**Average =**	**6490**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Dec-01	0.85	2.885					4.000				
2-Dec-01	0.85	1.948					4.000				
3-Dec-01	0.14	1.736					4.000				
4-Dec-01	0.84	2.616					4.000				
5-Dec-01	0.86	1.980	38.0	0.097	81.3	0.207	4.000	6.5	0.033	39.5	0.203
6-Dec-01	0.30	1.615					4.000				
7-Dec-01	0.02	1.398					4.000				
8-Dec-01	0.00	1.047					4.000				
9-Dec-01	0.29	0.957					4.000				
10-Dec-01	0.00	0.942					4.000				
11-Dec-01	0.10	0.904					4.000				
12-Dec-01	0.14	1.077	50.2	0.069	86.3	0.119	3.765	8.7	0.042	10.6	0.051
13-Dec-01	1.36	3.319					3.765				
14-Dec-01	0.56	1.795					3.765				
15-Dec-01	0.36	1.204					3.765				
16-Dec-01	0.80	2.769					3.765				
17-Dec-01	0.81	1.568					3.765				
18-Dec-01	0.36	1.365					3.411				
19-Dec-01	0.10	1.299	32.8	0.055	46.5	0.078	3.411	7.5	0.033	20.0	0.088
20-Dec-01	0.24	1.201					3.411				
21-Dec-01	0.01	1.042					3.411				
22-Dec-01	0.02	0.988					2.000				
23-Dec-01	0.01	0.902					2.000				
24-Dec-01	0.00	0.903					2.000				
25-Dec-01	0.00	0.841					2.000				
26-Dec-01	0.00	0.839	155.3	0.167	124.1	0.134	2.000	7.6	0.020	26.0	0.067
27-Dec-01	0.12	1.016					1.834				
28-Dec-01	0.39	0.966					1.834				
29-Dec-01	0.05	0.952					1.834				
30-Dec-01	0.00	1.035					1.834				
31-Dec-01	0.29	1.071					1.834				
Monthly Totals	9.87	44.180					99.404				
Monthly Avg.			69.1	0.097	84.6	0.134		7.6	0.032	24.0	0.102
Weekly Avg.			155.3	0.167	124.1	0.207		8.7	0.042	39.5	0.203

Dec '01 Effluent Summary

	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	7.6	***30***	8.7	***45***	N/A	**N/A**
TSS (mg/l)	24.0	***50***	39.5	***80***	N/A	**N/A**
BOD_5 (lb/day)	208.1	***500***	274	***750***	274	***1000***
TSS (lb/day)	663.3	***830***	1318	***1200***	1318	***1700***
BOD_5 Removal	89%	***85% Monthly Avg.***				
TSS Removal	72%	***65% Monthly Avg.***				

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	2001 Population =	6400
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2002 Population =	6580
From April 2001 to April 2002	**Average =**	**6490**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jan-02	0.37	1.485					1.741				
2-Jan-02	0.36	1.164	36.9	0.055	41.0	0.061	1.741	6.3	0.014	13.5	0.030
3-Jan-02	0.15	1.213					1.741				
4-Jan-02	0.01	1.039					1.741				
5-Jan-02	0.00	1.931					1.741				
6-Jan-02	1.66	3.322					1.741				
7-Jan-02	1.53	3.223					1.741				
8-Jan-02	0.59	1.997					1.741				
9-Jan-02	0.01	1.321	13.2	0.022	14.0	0.024	1.741	3.0	0.007	13.5	0.030
10-Jan-02	0.00	1.147					1.741				
11-Jan-02	0.01	1.075					0.912				
12-Jan-02	0.00	1.016					0.912				
13-Jan-02	0.10	0.980					0.912				
14-Jan-02	0.09	0.926					0.912				
15-Jan-02	0.01	0.883					0.769				
16-Jan-02	0.01	0.896	82.8	0.095	135.0	0.155	0.769	3.0	0.003	11.0	0.011
17-Jan-02	0.06	0.913					0.769				
18-Jan-02	0.03	0.971					0.769				
19-Jan-02	0.23	1.087					0.769				
20-Jan-02	0.58	1.913					0.769				
21-Jan-02	0.59	2.061					0.769				
22-Jan-02	0.87	1.761					0.769				
23-Jan-02	0.13	1.243	18.3	0.029	33.5	0.054	0.701	3.0	0.003	14.0	0.013
24-Jan-02	0.20	2.504					0.701				
25-Jan-02	1.80	4.018					0.701				
26-Jan-02	0.00	2.005					0.701				
27-Jan-02	0.96	2.436					0.635				
28-Jan-02	0.00	2.026					0.635				
29-Jan-02	0.00	1.492					0.635				
30-Jan-02	0.02	1.336	28.5	0.049	50.3	0.086	0.635	3.0	0.002	13.0	0.011
31-Jan-02	0.27	1.490					0.635				
Monthly Totals	10.64	50.874					33.189				
Monthly Avg.			35.9	0.050	54.8	0.076		3.7	0.006	13.0	0.019
Weekly Avg.			82.8	0.095	135.0	0.155		6.3	0.014	14.0	0.030

Jan '02 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	3.7	***30***	6.3	***45***	N/A	**N/A**
TSS (mg/l)	13.0	***50***	14.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	37.5	***500***	91	***750***	91	***1000***
TSS (lb/day)	122.7	***830***	196	***1200***	196	***1700***
BOD_5 Removal	90%	***85% Monthly Avg.***				
TSS Removal	76%	***65% Monthly Avg.***				

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J.O. INDP0008

	2001 Population =	6400
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2002 Population =	6580
From April 2001 to April 2002	**Average =**	**6490**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Feb-02	0.16	1.299					1.200				
2-Feb-02	0.00	1.149					1.200				
3-Feb-02	0.27	1.123					1.200				
4-Feb-02	0.00	1.029					1.303				
5-Feb-02	0.33	1.078					1.303				
6-Feb-02	0.14	1.106	61.5	0.087	72.0	0.102	1.303	3.0	0.005	18.5	0.031
7-Feb-02	1.11	3.034					2.000				
8-Feb-02	0.46	1.814					2.000				
9-Feb-02	0.04	1.304					2.000				
10-Feb-02	0.00	1.159					2.000				
11-Feb-02	0.00	1.109					2.000				
12-Feb-02	0.00	1.016					2.000				
13-Feb-02	0.00	0.951	69.0	0.084	97.3	0.119	2.000	4.2	0.011	17.8	0.046
14-Feb-02	0.00	0.931					2.000				
15-Feb-02	0.00	0.947					2.000				
16-Feb-02	0.10	0.999					0.000				
17-Feb-02	0.00	0.921					0.000				
18-Feb-02	0.07	0.968					0.000				
19-Feb-02	0.44	0.989					2.000				
20-Feb-02	0.00	0.894	32.0	0.037	46.0	0.053	1.834	11.4	0.027	19.5	0.046
21-Feb-02	0.12	0.880					2.000				
22-Feb-02	0.00	1.453					1.834				
23-Feb-02	0.87	1.424					1.741				
24-Feb-02	0.00	1.078					1.741				
25-Feb-02	0.00	0.943					1.741				
26-Feb-02	0.00	0.825					1.650				
27-Feb-02	0.00	0.877	70.3	0.079	81.0	0.091	1.650	4.2	0.009	18.5	0.039
28-Feb-02	0.00	0.837					1.650				
Monthly Totals	4.11	32.137					43.350				
Monthly Avg.			58.2	0.072	74.1	0.091		5.7	0.013	18.6	0.040
Weekly Avg.			70.3	0.087	97.3	0.119		11.4	0.027	19.5	0.046

Feb '02 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	5.7	***30***	11.4	***45***	N/A	**N/A**
TSS (mg/l)	18.6	***50***	19.5	***80***	N/A	**N/A**
BOD_5 (lb/day)	83.7	***500***	174	***750***	174	***1000***
TSS (lb/day)	262.7	***830***	298	***1200***	298	***1700***
BOD_5 Removal	90%	***85% Monthly Avg.***				
TSS Removal	75%	***65% Monthly Avg.***				

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	2001 Population =	6400
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2002 Population =	6580
From April 2001 to April 2002	**Average =**	**6490**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Mar-02	0.00	0.837					1.650				
2-Mar-02	0.00	0.866					1.650				
3-Mar-02	0.00	0.854					1.650				
4-Mar-02	0.00	0.810					1.650				
5-Mar-02	0.06	1.231					1.650				
6-Mar-02	1.09	2.411	29.0	0.090	44.0	0.136	1.650	6.8	0.014	19.0	0.040
7-Mar-02	0.11	1.283					0.986				
8-Mar-02	0.09	1.061					0.986				
9-Mar-02	0.39	1.083					0.986				
10-Mar-02	0.39	1.201					0.986				
11-Mar-02	1.05	3.011					0.986				
12-Mar-02	0.37	1.987					0.986				
13-Mar-02	0.86	1.711	11.6	0.026	16.5	0.036	0.986	9.9	0.013	29.0	0.037
14-Mar-02	0.09	1.312					1.141				
15-Mar-02	0.09	1.174					1.141				
16-Mar-02	0.18	1.236					1.141				
17-Mar-02	0.17	1.066					1.141				
18-Mar-02	0.13	1.281					1.141				
19-Mar-02	0.49	1.600					1.141				
20-Mar-02	0.02	1.105	33.6	0.048	27.5	0.039	1.141	7.8	0.011	28.6	0.042
21-Mar-02	0.00	0.991					2.000				
22-Mar-02	0.00	0.910					2.000				
23-Mar-02	0.06	0.957					2.000				
24-Mar-02	0.06	0.938					2.000				
25-Mar-02	0.00	0.872					2.000				
26-Mar-02	0.00	0.849					2.000				
27-Mar-02	0.00	0.815	33.6	0.035	42.6	0.045	1.834	12.3	0.029	29.0	0.068
28-Mar-02	0.00	0.843					1.834				
29-Mar-02	0.00	0.831					1.928				
30-Mar-02	0.00	0.789					1.834				
31-Mar-02	0.00	0.837					1.834				
Monthly Totals	5.70	36.752					46.053				
Monthly Avg.			27.0	0.050	32.7	0.064		9.2	0.017	26.4	0.047
Weekly Avg.			33.6	0.090	44.0	0.136		12.3	0.029	29.0	0.068

March '02 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	9.2	***30***	12.3	***45***	N/A	**N/A**
TSS (mg/l)	26.4	***50***	29.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	109.3	***500***	188	***750***	188	***1000***
TSS (lb/day)	303.9	***830***	444	***1200***	444	***1700***
BOD_5 Removal	66%	***85% Monthly Avg.***				
TSS Removal	19%	***65% Monthly Avg.***				

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	2001 Population =	6400
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2002 Population =	6580
From April 2001 to April 2002	**Average =**	**6490**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Apr-02	0.00	0.771					1.741				
2-Apr-02	0.00	0.770					1.741				
3-Apr-02	0.00	0.764	34.2	0.034	32.0	0.031	1.741	14.1	0.032	28.0	0.063
4-Apr-02	0.00	0.736					1.650				
5-Apr-02	0.19	0.844					1.650				
6-Apr-02	0.00	0.779					1.650				
7-Apr-02	0.01	0.837					1.650				
8-Apr-02	0.00	0.815					1.650				
9-Apr-02	0.56	1.158					1.650				
10-Apr-02	0.35	0.926	63.1	0.075	57.0	0.068	1.561	3.4	0.007	19.5	0.039
11-Apr-02	0.16	0.881					1.561				
12-Apr-02	0.00	0.866					1.561				
13-Apr-02	0.31	1.033					1.561				
14-Apr-02	0.31	0.939					1.561				
15-Apr-02	0.03	0.877					1.561				
16-Apr-02	0.09	0.845					1.561				
17-Apr-02	0.09	1.039	36.4	0.049	54.5	0.073	1.561	3.6	0.007	15.5	0.031
18-Apr-02	0.10	0.929					1.561				
19-Apr-02	0.00	0.864					1.561				
20-Apr-02	0.00	0.872					1.561				
21-Apr-02	0.00	0.813					1.561				
22-Apr-02	0.00	0.775					1.561				
23-Apr-02	0.00	0.802					1.387				
24-Apr-02	0.00	0.798	32.0	0.033	19.5	0.020	1.387	3.0	0.005	9.0	0.016
25-Apr-02	0.00	0.739					1.387				
26-Apr-02	0.04	0.776					1.387				
27-Apr-02	0.00	0.786					1.387				
28-Apr-02	0.00	0.748					1.303				
29-Apr-02	0.00	0.710					1.303				
30-Apr-02	0.00	0.822					1.303				
Monthly Totals	2.24	25.314					46.260				
Monthly Avg.			41.4	0.048	40.8	0.048		6.0	0.013	18.0	0.037
Weekly Avg.			63.1	0.075	57.0	0.073		14.1	0.032	28.0	0.063

Ap '02 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	6.0	***30***	14.1	***45***	N/A	**N/A**
TSS (mg/l)	18.0	***50***	28.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	82.6	***500***	205	***750***	205	***1000***
TSS (lb/day)	241.6	***830***	407	***1200***	407	***1700***
BOD_5 Removal	85%	***85% Monthly Avg.***				
TSS Removal	56%	***65% Monthly Avg.***				

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	2000 Population =	6035
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2001 Population =	6400
From April 2000 to April 2001	**Average =**	**6218**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Apr-00	0.00	0.415					1.473				
2-Apr-00	0.00	0.460					1.473				
3-Apr-00	0.00	0.421					1.473				
4-Apr-00	0.00	0.440					1.000				
5-Apr-00	0.00	0.473	87.1	0.055	74.7	0.047	1.000	14.3	0.019	46.0	0.062
6-Apr-00	0.03	0.420					0.912				
7-Apr-00	0.00	0.543					0.912				
8-Apr-00	0.00	0.487					0.912				
9-Apr-00	0.03	0.450					0.912				
10-Apr-00	0.00	0.484					0.912				
11-Apr-00	0.00	0.406					0.912				
12-Apr-00	0.00	0.419	62.5	0.035	128.0	0.072	0.912	15.7	0.019	40.0	0.049
13-Apr-00	0.81	0.941					0.912				
14-Apr-00	0.03	0.731					0.912				
15-Apr-00	0.05	0.636					0.912				
16-Apr-00	0.04	0.551					0.912				
17-Apr-00	0.04	0.585					0.900				
18-Apr-00	0.00	0.452					0.769				
19-Apr-00	0.00	0.463	91.8	0.057	36.0	0.022	0.769	7.2	0.007	37.0	0.038
20-Apr-00	0.00	0.470					0.769				
21-Apr-00	0.00	0.546					0.769				
22-Apr-00	0.12	0.459					0.769				
23-Apr-00	0.12	0.474					0.769				
24-Apr-00	0.05	0.424					0.769				
25-Apr-00	0.18	0.421					0.769				
26-Apr-00	0.00	0.389	21.6	0.011	163.0	0.085	0.701	3.9	0.004	34.0	0.032
27-Apr-00	0.04	0.448					0.701				
28-Apr-00	0.20	0.564					0.701				
29-Apr-00	0.00	0.586					0.701				
30-Apr-00	0.00	0.467					0.701				
Monthly Totals	1.74	15.025					27.008				
Monthly Avg.			65.8	0.040	100.4	0.057		10.3	0.012	39.3	0.045
Weekly Avg.			91.8	0.057	163.0	0.085		15.7	0.019	46.0	0.062

Ap '00 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	10.3	***30***	15.7	***45***	N/A	**N/A**
TSS (mg/l)	39.3	***50***	46.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	76.9	***500***	119	***750***	119	***1000***
TSS (lb/day)	281.0	***830***	384	***1200***	384	***1700***
BOD_5 Removal	84%	***85% Monthly Avg.***				
TSS Removal	61%	***65% Monthly Avg.***				

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER PRELIMINARY DESIGN REPORT
J.O. INDP0008

	2000 Population =	6035
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2001 Population =	6400
From April 2000 to April 2001	**Average =**	**6218**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-May-00	0.00	0.485					0.701				
2-May-00	0.30	0.469					0.701				
3-May-00	0.13	0.463	202.0	0.125	181.1	0.112	0.701	7.3	0.007	26.0	0.024
4-May-00	0.16	0.522					0.701				
5-May-00	0.05	0.477					0.701				
6-May-00	0.00	0.422					0.701				
7-May-00	0.00	0.470					0.701				
8-May-00	0.03	0.515					0.701				
9-May-00	0.38	0.757					0.701				
10-May-00	0.57	0.886	66.8	0.079	81.0	0.096	0.701	3.2	0.003	20.0	0.019
11-May-00	0.07	0.633					0.701				
12-May-00	0.00	0.477					0.701				
13-May-00	0.00	0.455					0.701				
14-May-00	0.00	0.465					0.701				
15-May-00	0.07	0.426					0.701				
16-May-00	0.00	0.436					0.701				
17-May-00	0.00	0.426	238.6	0.136	213.6	0.122	0.701	15.8	0.015	48.0	0.045
18-May-00	0.00	0.430					0.701				
19-May-00	0.04	0.450					0.701				
20-May-00	0.00	0.427					0.701				
21-May-00	0.00	0.396					0.701				
22-May-00	0.00	0.291					0.701				
23-May-00	0.06	0.404					0.701				
24-May-00	0.00	0.393	65.0	0.034	70.0	0.037	0.701	20.5	0.019	46.0	0.043
25-May-00	0.00	0.403					0.701				
26-May-00	0.05	0.379					0.701				
27-May-00	0.12	0.403					0.701				
28-May-00	0.00	0.393					0.701				
29-May-00	0.04	0.405					0.701				
30-May-00	0.00	0.400					0.701				
31-May-00	0.07	0.293					0.701				
Monthly Totals	2.14	14.251					21.731				
Monthly Avg.			143.1	0.094	136.4	0.092		11.7	0.011	35.0	0.033
Weekly Avg.			238.6	0.136	213.6	0.122		20.5	0.019	48.0	0.045

May '00 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	11.7	***30***	20.5	***45***	N/A	**N/A**
TSS (mg/l)	35.0	***50***	48.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	68.4	***500***	120	***750***	120	***1000***
TSS (lb/day)	204.6	***830***	281	***1200***	281	***1700***
BOD_5 Removal	92%	***85% Monthly Avg.***				
TSS Removal	74%	***65% Monthly Avg.***				

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J.O. INDP0008

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2001 Population =	6400
From April 2000 to April 2001	**Average =**	**6218**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jun-00	0.00	0.329	83.1	0.037	140.8	0.062	0.000				
2-Jun-00	0.00	0.313					0.000				
3-Jun-00	0.00	0.313					0.000				
4-Jun-00	0.00	0.330					0.000				
5-Jun-00	0.00	0.256					0.000				
6-Jun-00	0.02	0.388					0.000				
7-Jun-00	0.35	0.451	61.4	0.037	49.0	0.030	0.000				
8-Jun-00	0.04	0.379					0.000				
9-Jun-00	0.08	0.352					0.000				
10-Jun-00	0.13	0.393					0.000				
11-Jun-00	0.20	0.605					0.000				
12-Jun-00	0.51	0.515					0.000				
13-Jun-00	0.00	0.419					0.000				
14-Jun-00	0.00	0.376	363.0	0.183	19.0	0.010	0.000				
15-Jun-00	0.00	0.370					0.000				
16-Jun-00	0.00	0.356					0.000				
17-Jun-00	0.00	0.366					0.000				
18-Jun-00	0.00	0.350					0.000				
19-Jun-00	0.00	0.375					0.000				
20-Jun-00	0.00	0.385					0.000				
21-Jun-00	0.00	0.365	221.1	0.108	163.0	0.080	0.000				
22-Jun-00	0.00	0.501					0.000				
23-Jun-00	0.00	0.373					0.000				
24-Jun-00	0.00	0.400					0.000				
25-Jun-00	0.00	0.379					0.000				
26-Jun-00	0.00	0.427					0.000				
27-Jun-00	0.00	0.407					0.000				
28-Jun-00	0.00	0.475	196.6	0.125	150.0	0.096	0.000				
29-Jun-00	0.00	0.465					0.000				
30-Jun-00	0.00	0.455					0.000				
Monthly Totals	1.33	11.868					0.000				
Monthly Avg.			185.0	0.098	104.4	0.055		0.0	0.000	0.0	0.000
Weekly Avg.			363.0	0.183	163.0	0.096		0.0	0.000	0.0	0.000

June '00 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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SANITARY SEWER PRELIMINARY DESIGN REPORT
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	2000 Population =	6035
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2001 Population =	6400
From April 2000 to April 2001	**Average =**	**6218**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jul-00	0.00	0.465					0.000				
2-Jul-00	0.00	0.465					0.000				
3-Jul-00	0.00	0.465					0.000				
4-Jul-00	0.07	0.393					0.000				
5-Jul-00	0.06	0.493	176.1	0.116	143.9	0.095	0.000				
6-Jul-00	0.00	0.403					0.000				
7-Jul-00	0.00	0.483					0.000				
8-Jul-00	0.00	0.375					0.000				
9-Jul-00	0.00	0.390					0.000				
10-Jul-00	0.00	0.400					0.000				
11-Jul-00	0.00	0.398					0.000				
12-Jul-00	0.00	0.423	97.3	0.055	52.0	0.030	0.000				
13-Jul-00	0.00	0.375					0.000				
14-Jul-00	0.00	0.400					0.000				
15-Jul-00	0.00	0.423					0.000				
16-Jul-00	0.00	0.408					0.000				
17-Jul-00	0.00	0.455					0.000				
18-Jul-00	0.00	0.399					0.000				
19-Jul-00	0.00	0.425	160.1	0.091	75.0	0.043	0.000				
20-Jul-00	0.00	0.465					0.000				
21-Jul-00	0.00	0.440					0.000				
22-Jul-00	0.00	0.412					0.000				
23-Jul-00	0.00	0.400					0.000				
24-Jul-00	0.00	0.420					0.000				
25-Jul-00	0.00	0.399					0.000				
26-Jul-00	0.00	0.400	39.0	0.021	56.0	0.030	0.000				
27-Jul-00	0.00	0.395					0.000				
28-Jul-00	0.00	0.395					0.000				
29-Jul-00	0.00	0.400					0.000				
30-Jul-00	0.00	0.350					0.000				
31-Jul-00	0.00	0.375					0.000				
Monthly Totals	0.13	12.889					0.000				
Monthly Avg.			118.1	0.071	81.7	0.049		0.0	0.000	0.0	0.000
Weekly Avg.			176.1	0.116	143.9	0.095		0.0	0.000	0.0	0.000

July '00 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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J.O. INDP0008

	2000 Population =	6035
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2001 Population =	6400
From April 2000 to April 2001	**Average =**	**6218**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Aug-00	0.00	0.415					0.000				
2-Aug-00	0.00	0.375	229.9	0.116	173.3	0.087	0.000				
3-Aug-00	0.00	0.393					0.000				
4-Aug-00	0.00	0.400					0.000				
5-Aug-00	0.00	0.425					0.000				
6-Aug-00	0.00	0.398					0.000				
7-Aug-00	0.00	0.410					0.000				
8-Aug-00	0.00	0.399					0.000				
9-Aug-00	0.00	0.360	9.3	0.004	16.0	0.008	0.000				
10-Aug-00	0.00	0.373					0.000				
11-Aug-00	0.00	0.352					0.000				
12-Aug-00	0.00	0.359					0.000				
13-Aug-00	0.00	0.383					0.000				
14-Aug-00	0.00	0.385					0.000				
15-Aug-00	0.00	0.379					0.000				
16-Aug-00	0.00	0.373	164.7	0.082	110.0	0.055	0.000				
17-Aug-00	0.00	0.363					0.000				
18-Aug-00	0.00	0.383					0.000				
19-Aug-00	0.04	0.379					0.000				
20-Aug-00	0.00	0.404					0.000				
21-Aug-00	0.00	0.383					0.000				
22-Aug-00	0.00	0.403					0.000				
23-Aug-00	0.00	0.378	272.6	0.138	171.0	0.087	0.000				
24-Aug-00	0.00	0.385					0.000				
25-Aug-00	0.00	0.384					0.000				
26-Aug-00	0.00	0.380					0.000				
27-Aug-00	0.00	0.412					0.000				
28-Aug-00	0.00	0.373					0.000				
29-Aug-00	0.00	0.389					0.000				
30-Aug-00	0.00	0.369	250.8	0.124	115.0	0.057	0.000				
31-Aug-00	0.00	0.359					0.000				
Monthly Totals	0.04	11.923					0.000				
Monthly Avg.			185.5	0.093	117.1	0.059		0.0	0.000	0.0	0.000
Weekly Avg.			272.6	0.138	173.3	0.087		0.0	0.000	0.0	0.000

August '00 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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	2000 Population =	6035
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2001 Population =	6400
From April 2000 to April 2001	**Average =**	**6218**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Sep-00	0.01	0.420					0.000				
2-Sep-00	0.22	0.545					0.000				
3-Sep-00	0.38	0.487					0.000				
4-Sep-00	0.01	0.428					0.000				
5-Sep-00	0.00	0.401					0.000				
6-Sep-00	0.00	0.364	102.9	0.050	45.0	0.022	0.000				
7-Sep-00	0.00	0.378					0.000				
8-Sep-00	0.13	0.354					0.000				
9-Sep-00	0.00	0.364					0.000				
10-Sep-00	0.07	0.399					0.000				
11-Sep-00	0.00	0.431					0.000				
12-Sep-00	0.00	0.374					0.000				
13-Sep-00	0.00	0.362	139.9	0.068	264.0	0.128	0.000				
14-Sep-00	0.00	0.371					0.000				
15-Sep-00	0.00	0.360					0.000				
16-Sep-00	0.00	0.367					0.000				
17-Sep-00	0.00	0.406					0.000				
18-Sep-00	0.00	0.381					0.000				
19-Sep-00	0.00	0.389					0.000				
20-Sep-00	0.00	0.364	184.2	0.090	140.0	0.068	0.000				
21-Sep-00	0.00	0.385					0.000				
22-Sep-00	0.00	0.385					0.000				
23-Sep-00	0.00	0.368					0.000				
24-Sep-00	0.00	0.402					0.000				
25-Sep-00	0.00	0.359					0.000				
26-Sep-00	0.00	0.379					0.000				
27-Sep-00	0.00	0.362	102.9	0.050	69.0	0.034	0.000				
28-Sep-00	0.00	0.357					0.000				
29-Sep-00	0.00	0.372					0.000				
30-Sep-00	0.00	0.382					0.000				
Monthly Totals	0.82	11.696					0.000				
Monthly Avg.			132.5	0.065	129.5	0.063		0.0	0.000	0.0	0.000
Weekly Avg.			184.2	0.090	264.0	0.128		0.0	0.000	0.0	0.000

Sept '00 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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	2000 Population =	6035
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2001 Population =	6400
From April 2000 to April 2001	**Average =**	**6218**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Oct-00	0.19	0.418					0.000				
2-Oct-00	0.00	0.358					0.000				
3-Oct-00	0.00	0.384					0.000				
4-Oct-00	0.00	0.358	127.1	0.061	41.0	0.020	0.000				
5-Oct-00	0.00	0.383					0.000				
6-Oct-00	0.00	0.331					0.000				
7-Oct-00	0.00	0.405					0.000				
8-Oct-00	0.00	0.427					0.000				
9-Oct-00	1.25	0.970					0.000				
10-Oct-00	0.18	0.496					0.000				
11-Oct-00	0.00	0.389	195.0	0.102	210.0	0.110	0.000				
12-Oct-00	0.00	0.389					0.000				
13-Oct-00	0.09	0.456					0.000				
14-Oct-00	0.00	0.398					0.000				
15-Oct-00	0.05	0.430					0.000				
16-Oct-00	0.00	0.365					0.000				
17-Oct-00	0.00	0.408					0.000				
18-Oct-00	0.07	0.385	116.0	0.060	16.9	0.009	0.000				
19-Oct-00	0.00	0.511					0.000				
20-Oct-00	0.48	0.669					0.000				
21-Oct-00	0.00	0.448					0.000				
22-Oct-00	0.10	0.429					0.000				
23-Oct-00	0.00	0.405					0.000				
24-Oct-00	0.00	0.380					0.000				
25-Oct-00	0.00	0.378	152.9	0.078	154.0	0.078	0.000				
26-Oct-00	0.00	0.398					0.000				
27-Oct-00	0.06	0.418					0.000				
28-Oct-00	0.00	0.480					0.000				
29-Oct-00	0.49	0.450					0.000				
30-Oct-00	0.00	0.386					0.000				
31-Oct-00	0.00	0.396					0.000				
Monthly Totals	2.96	13.498					0.000				
Monthly Avg.			147.8	0.075	105.5	0.054		0.0	0.000	0.0	0.000
Weekly Avg.			195.0	0.102	210.0	0.110		0.0	0.000	0.0	0.000

Oct '00 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

CITY OF INDEPENDENCE, OREGON
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J.O. INDP0008

	2000 Population =	6035
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2001 Population =	6400
From April 2000 to April 2001	**Average =**	**6218**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Nov-00	0.12	0.436	90.8	0.053	65.0	0.038	0.000				
2-Nov-00	0.15	0.437					0.000				
3-Nov-00	0.03	0.383					0.000				
4-Nov-00	0.03	0.414					0.000				
5-Nov-00	0.00	0.422					0.000				
6-Nov-00	0.05	0.407					0.000				
7-Nov-00	0.06	0.433					0.000				
8-Nov-00	0.26	0.528	29.7	0.021	48.0	0.034	0.000				
9-Nov-00	0.42	0.343					0.000				
10-Nov-00	0.02	0.424					0.000				
11-Nov-00	0.00	0.491					0.000				
12-Nov-00	0.00	0.439					0.000				
13-Nov-00	0.00	0.393					0.000				
14-Nov-00	0.00	0.413					0.000				
15-Nov-00	0.00	0.393	159.5	0.084	524.0	0.276	0.000				
16-Nov-00	0.00	0.410					0.000				
17-Nov-00	0.00	0.365					0.000				
18-Nov-00	0.00	0.394					0.000				
19-Nov-00	0.00	0.415					0.000				
20-Nov-00	0.03	0.377					0.000				
21-Nov-00	0.00	0.392	108.7	0.057	94.0	0.049	1.000	20.7	0.028	28.0	0.038
22-Nov-00	0.00	0.383					1.000				
23-Nov-00	0.00	0.742					1.000				
24-Nov-00	0.00	0.441					1.000				
25-Nov-00	0.94	0.532					1.000				
26-Nov-00	0.02	0.616					1.000				
27-Nov-00	0.32	0.619					1.141				
28-Nov-00	0.00	0.480					1.141				
29-Nov-00	0.38	0.791	50.7	0.054	57.0	0.060	1.141	18.2	0.028	27.0	0.041
30-Nov-00	0.31	0.533					1.141				
Monthly Totals	3.14	13.846					10.564				
Monthly Avg.			87.9	0.054	157.6	0.092		19.5	0.028	27.5	0.039
Weekly Avg.			159.5	0.084	524.0	0.276		20.7	0.028	28.0	0.041

Nov '00 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	19.5	***30***	20.7	***45***	N/A	**N/A**
TSS (mg/l)	27.5	***50***	28.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	173.0	***500***	173	***750***	173	***1000***
TSS (lb/day)	245.2	***830***	257	***1200***	257	***1700***
BOD_5 Removal	78%	***85% Monthly Avg.***				
TSS Removal	83%	***65% Monthly Avg.***				

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From April 2000 to April 2001	**Average =**	**6218**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Dec-00	0.07	0.512					1.141				
2-Dec-00	0.08	0.538					1.141				
3-Dec-00	0.00	0.476					1.141				
4-Dec-00	0.00	0.441					1.141				
5-Dec-00	0.00	0.406					1.141				
6-Dec-00	0.01	0.400	20.3	0.011	98.0	0.053	1.141	13.2	0.020	31.0	0.047
7-Dec-00	0.00	0.405					1.141				
8-Dec-00	0.00	0.400					1.141				
9-Dec-00	0.03	0.401					1.141				
10-Dec-00	0.03	0.423					1.141				
11-Dec-00	0.04	0.432					1.141				
12-Dec-00	0.29	0.632					1.141				
13-Dec-00	0.37	1.199	36.0	0.058	42.5	0.068	1.141	14.9	0.023	42.6	0.065
14-Dec-00	0.41	1.173					1.141				
15-Dec-00	0.25	0.723					0.986				
16-Dec-00	0.17	0.721					0.986				
17-Dec-00	0.15	0.614					0.986				
18-Dec-00	0.00	0.512					0.986				
19-Dec-00	0.17	0.583					0.986				
20-Dec-00	0.21	0.665	62.7	0.056	62.0	0.055	0.986	12.6	0.017	35.0	0.046
21-Dec-00	0.57	1.373					1.741				
22-Dec-00	1.39	1.185					1.741				
23-Dec-00	0.00	0.994					1.741				
24-Dec-00	0.00	0.678					1.741				
25-Dec-00	0.38	0.518					1.741				
26-Dec-00	0.00	0.511					1.741				
27-Dec-00	0.05	0.477	147.3	0.094	65.3	0.042	1.741	16.1	0.038	20.0	0.047
28-Dec-00	0.00	0.375					1.741				
29-Dec-00	0.00	0.408					1.741				
30-Dec-00	0.03	0.425					1.741				
31-Dec-00	0.03	0.429					1.741				
Monthly Totals	4.73	19.029					41.041				
Monthly Avg.			66.6	0.055	67.0	0.055		14.2	0.024	32.2	0.051
Weekly Avg.			147.3	0.094	98.0	0.068		16.1	0.038	42.6	0.065

Dec '00 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	14.2	***30***	16.1	***45***	N/A	**N/A**
TSS (mg/l)	32.2	***50***	42.6	***80***	N/A	**N/A**
BOD_5 (lb/day)	151.2	***500***	234	***750***	234	***1000***
TSS (lb/day)	319.6	***830***	405	***1200***	405	***1700***
BOD_5 Removal	79%	***85% Monthly Avg.***				
TSS Removal	52%	***65% Monthly Avg.***				

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From April 2000 to April 2001	**Average =**	**6218**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jan-01	0.00	0.425					1.741				
2-Jan-01	0.00	0.417					1.741				
3-Jan-01	0.00	0.401	82.5	0.044	77.0	0.041	1.741	11.8	0.028	19.3	0.045
4-Jan-01	0.00	0.402					1.741				
5-Jan-01	0.02	0.378					1.741				
6-Jan-01	0.00	0.389					1.741				
7-Jan-01	0.00	0.429					1.741				
8-Jan-01	0.12	0.444					1.741				
9-Jan-01	0.21	0.473					1.741				
10-Jan-01	0.07	0.420	31.8	0.018	47.3	0.027	1.741	12.0	0.028	24.6	0.057
11-Jan-01	0.00	0.402					0.912				
12-Jan-01	0.07	0.392					0.912				
13-Jan-01	0.00	0.497					0.912				
14-Jan-01	0.38	0.448					0.912				
15-Jan-01	0.00	0.451					0.769				
16-Jan-01	0.00	0.402					0.769				
17-Jan-01	0.00	0.406	44.1	0.024	75.0	0.041	0.769	6.6	0.007	26.6	0.027
18-Jan-01	0.00	0.457					0.769				
19-Jan-01	0.03	0.405					0.769				
20-Jan-01	0.51	0.509					0.769				
21-Jan-01	0.00	0.669					0.769				
22-Jan-01	0.00	0.495					0.769				
23-Jan-01	0.00	0.537					0.701				
24-Jan-01	0.26	0.681	53.6	0.049	94.6	0.086	0.701	13.5	0.013	31.3	0.029
25-Jan-01	0.21	0.681					0.701				
26-Jan-01	0.00	0.514					0.701				
27-Jan-01	0.00	0.503					0.635				
28-Jan-01	0.00	0.520					0.635				
29-Jan-01	0.33	0.517					0.635				
30-Jan-01	0.00	0.456					0.635				
31-Jan-01	0.00	0.441					0.635				
Monthly Totals	2.21	14.561					33.189				
Monthly Avg.			53.0	0.034	73.5	0.049		11.0	0.019	25.5	0.040
Weekly Avg.			82.5	0.049	94.6	0.086		13.5	0.028	31.3	0.057

Jan '01 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	11.0	***30***	13.5	***45***	N/A	**N/A**
TSS (mg/l)	25.5	***50***	31.3	***80***	N/A	**N/A**
BOD_5 (lb/day)	116.7	***500***	174	***750***	174	***1000***
TSS (lb/day)	247.8	***830***	357	***1200***	357	***1700***
BOD_5 Removal	79%	***85% Monthly Avg.***				
TSS Removal	65%	***65% Monthly Avg.***				

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From April 2000 to April 2001	**Average =**	**6218**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Feb-01	0.00	0.434	43.8	0.025	52.0	0.030	0.571	6.2	0.005	36.0	0.028
2-Feb-01	0.24	0.472					0.571				
3-Feb-01	0.12	0.653					0.571				
4-Feb-01	0.23	0.618					0.571				
5-Feb-01	0.00	0.508					0.571				
6-Feb-01	0.03	0.490					0.571				
7-Feb-01	0.00	0.435	44.4	0.026	68.0	0.040	0.571	3.0	0.002	27.3	0.021
8-Feb-01	0.06	0.467					0.635				
9-Feb-01	0.00	0.442					0.635				
10-Feb-01	0.28	0.545					0.635				
11-Feb-01	0.00	0.517					0.635				
12-Feb-01	0.00	0.449					0.635				
13-Feb-01	0.00	0.415					0.635				
14-Feb-01	0.00	0.401	37.5	0.020	40.0	0.022	0.635	3.0	0.003	28.6	0.024
15-Feb-01	0.06	0.427					0.635				
16-Feb-01	0.09	0.435					0.635				
17-Feb-01	0.00	0.447					0.701				
18-Feb-01	0.22	0.482					0.701				
19-Feb-01	0.00	0.450					0.701				
20-Feb-01	0.00	0.529					0.701				
21-Feb-01	0.60	0.735	45.8	0.045	80.0	0.079	0.701	3.0	0.003	22.0	0.021
22-Feb-01	0.00	0.579					0.701				
23-Feb-01	0.00	0.484					0.701				
24-Feb-01	0.00	0.480					0.701				
25-Feb-01	0.00	0.455					0.701				
26-Feb-01	0.00	0.439					0.701				
27-Feb-01	0.00	0.434					0.701				
28-Feb-01	0.00	0.429					0.701				
Monthly Totals	1.93	13.651					18.124				
Monthly Avg.			42.9	0.029	60.0	0.043		3.8	0.003	28.5	0.023
Weekly Avg.			45.8	0.045	80.0	0.079		6.2	0.005	36.0	0.028

Feb '01 Effluent Summary

	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	3.8	***30***	6.2	***45***	N/A	**N/A**
TSS (mg/l)	28.5	***50***	36.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	19.3	***500***	30	***750***	30	***1000***
TSS (lb/day)	145.4	***830***	171	***1200***	171	***1700***
BOD_5 Removal	91%	***85% Monthly Avg.***				
TSS Removal	53%	***65% Monthly Avg.***				

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DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Mar-01	0.37	0.789	57.8	0.061	55.0	0.058	0.701	3.1	0.003	17.3	0.016
2-Mar-01	0.19	0.645					0.701				
3-Mar-01	0.00	0.532					0.701				
4-Mar-01	0.12	0.568					0.701				
5-Mar-01	0.00	0.475					0.701				
6-Mar-01	0.00	0.462					0.571				
7-Mar-01	0.00	0.440	65.7	0.039	107.0	0.063	0.571	13.0	0.010	36.0	0.028
8-Mar-01	0.02	0.448					0.571				
9-Mar-01	0.03	0.436					0.571				
10-Mar-01	0.00	0.441					0.571				
11-Mar-01	0.00	0.438					0.571				
12-Mar-01	0.00	0.408					0.571				
13-Mar-01	0.00	0.413					0.571				
14-Mar-01	0.00	0.597	66.3	0.053	178.0	0.143	0.571	15.7	0.012	51.0	0.039
15-Mar-01	0.11	0.437					0.571				
16-Mar-01	0.15	0.600					0.571				
17-Mar-01	0.00	0.600					0.571				
18-Mar-01	0.42	0.559					0.571				
19-Mar-01	0.00	0.485					0.571				
20-Mar-01	0.00	0.455					0.571				
21-Mar-01	0.00	0.415	47.7	0.027	74.6	0.042	0.571	13.2	0.010	56.0	0.043
22-Mar-01	0.00	0.425					0.571				
23-Mar-01	0.00	0.383					0.571				
24-Mar-01	0.00	0.567					0.571				
25-Mar-01	0.67	0.581					0.571				
26-Mar-01	0.00	0.575					0.571				
27-Mar-01	0.46	0.900					0.571				
28-Mar-01	0.04	0.642	45.3	0.039	54.0	0.047	0.571	19.2	0.015	68.0	0.052
29-Mar-01	0.08	0.528					0.571				
30-Mar-01	0.00	0.479					0.571				
31-Mar-01	0.00	0.490					0.571				
Monthly Totals	2.66	16.213					18.351				
Monthly Avg.			56.6	0.044	93.7	0.070		12.8	0.010	45.7	0.036
Weekly Avg.			66.3	0.061	178.0	0.143		19.2	0.015	68.0	0.052

March '01 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	12.8	***30***	19.2	***45***	N/A	**N/A**
TSS (mg/l)	45.7	***50***	68.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	61.8	***500***	91	***750***	91	***1000***
TSS (lb/day)	221.2	***830***	324	***1200***	324	***1700***
BOD_5 Removal	77%	***85% Monthly Avg.***				
TSS Removal	51%	***65% Monthly Avg.***				

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From April 2000 to April 2001	**Average =**	**6218**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Apr-01	0.00	0.531					0.571				
2-Apr-01	0.15	0.495					0.571				
3-Apr-01	0.00	0.463					0.571				
4-Apr-01	0.00	0.429	164.0	0.094	212.0	0.122	0.571	19.3	0.015	41.3	0.032
5-Apr-01	0.00	0.438					0.571				
6-Apr-01	0.13	0.458					0.571				
7-Apr-01	0.00	0.451					0.571				
8-Apr-01	0.18	0.520					0.571				
9-Apr-01	0.01	0.455					0.571				
10-Apr-01	0.13	0.534					0.571				
11-Apr-01	0.06	0.446	39.3	0.024	40.0	0.024	0.571	24.3	0.019	56.7	0.043
12-Apr-01	0.02	0.456					0.571				
13-Apr-01	0.00	0.405					0.571				
14-Apr-01	0.00	0.438					0.571				
15-Apr-01	0.03	0.440					0.571				
16-Apr-01	0.00	0.414					0.571				
17-Apr-01	0.09	0.420					0.571				
18-Apr-01	0.01	0.407	54.6	0.030	49.0	0.027	0.571	8.9	0.007	17.5	0.013
19-Apr-01	0.02	0.408					0.571				
20-Apr-01	0.00	0.381					0.912				
21-Apr-01	0.00	0.395					0.912				
22-Apr-01	0.00	0.446					0.912				
23-Apr-01	0.09	0.442					0.912				
24-Apr-01	0.00	0.389					0.912				
25-Apr-01	0.00	0.397	165.3	0.088	152.0	0.081	0.912	10.8	0.013	11.0	0.013
26-Apr-01	0.00	0.381					0.912				
27-Apr-01	0.00	0.374					0.912				
28-Apr-01	0.00	0.420					0.912				
29-Apr-01	0.00	0.443					0.912				
30-Apr-01	0.52	0.637					0.912				
Monthly Totals	1.44	13.313					20.881				
Monthly Avg.			105.8	0.059	113.3	0.063		15.8	0.013	31.6	0.025
Weekly Avg.			165.3	0.094	212.0	0.122		24.3	0.019	56.7	0.043

Ap '01 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	15.8	***30***	24.3	***45***	N/A	**N/A**
TSS (mg/l)	31.6	***50***	56.7	***80***	N/A	**N/A**
BOD_5 (lb/day)	83.0	***500***	116	***750***	116	***1000***
TSS (lb/day)	158.4	***830***	270	***1200***	270	***1700***
BOD_5 Removal	85%	***85% Monthly Avg.***				
TSS Removal	72%	***65% Monthly Avg.***				

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	1999 Population =	5803
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2000 Population =	6035
From April 1999 to April 2000	**Average =**	**5919**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Apr-99	0.00	0.844	54.9	0.065	97.8	0.116	0.986	18.3	0.025	55.0	0.076
2-Apr-99	0.12	0.701					0.986				
3-Apr-99	0.12	0.722					0.986				
4-Apr-99	0.12	0.666					0.986				
5-Apr-99	0.00	0.623					0.839				
6-Apr-99	0.00	0.523					0.839				
7-Apr-99	0.00	0.536	32.7	0.025	14.0	0.011	0.839	18.9	0.022	40.2	0.048
8-Apr-99	0.03	0.477					0.839				
9-Apr-99	0.06	0.538					0.839				
10-Apr-99	0.81	0.703					0.839				
11-Apr-99	0.00	0.538					0.839				
12-Apr-99	0.00	0.475					0.839				
13-Apr-99	0.00	0.438					0.839				
14-Apr-99	0.00	0.429	72.9	0.044	66.7	0.040	0.839	14.6	0.017	32.1	0.038
15-Apr-99	0.00	0.422					1.741				
16-Apr-99	0.00	0.406					1.741				
17-Apr-99	0.00	0.416					1.741				
18-Apr-99	0.01	0.433					1.741				
19-Apr-99	0.04	0.405					1.561				
20-Apr-99	0.00	0.452					1.561				
21-Apr-99	0.00	0.448	98.5	0.062	84.1	0.053	1.561	11.2	0.025	31.0	0.068
22-Apr-99	0.00	0.408					0.986				
23-Apr-99	0.00	0.377					1.141				
24-Apr-99	0.00	0.394					1.141				
25-Apr-99	0.03	0.421					1.141				
26-Apr-99	0.00	0.383					1.141				
27-Apr-99	0.22	0.407					1.561				
28-Apr-99	0.02	0.379	14.0	0.007	130.1	0.069	1.561	12.7	0.028	26.6	0.059
29-Apr-99	0.00	0.387					1.561				
30-Apr-99	0.00	0.371					1.561				
Monthly Totals	1.58	14.722					35.775				
Monthly Avg.			54.6	0.041	78.5	0.058		15.1	0.024	37.0	0.058
Weekly Avg.			98.5	0.065	130.1	0.116		18.9	0.028	55.0	0.076

Ap '99 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	15.1	***30***	18.9	***45***	N/A	**N/A**
TSS (mg/l)	37.0	***50***	55.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	139.2	***500***	165	***750***	165	***1000***
TSS (lb/day)	341.6	***830***	452	***1200***	452	***1700***
BOD_5 Removal	72%	***85% Monthly Avg.***				
TSS Removal	53%	***65% Monthly Avg.***				

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	1999 Population =	5803
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2000 Population =	6035
From April 1999 to April 2000	**Average =**	**5919**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-May-99	0.06	0.429					1.561				
2-May-99	0.07	0.543					1.561				
3-May-99	0.18	0.484					1.561				
4-May-99	0.13	0.418					1.561				
5-May-99	0.00	0.378	84.4	0.045	59.0	0.031	1.561	16.3	0.036	21.1	0.046
6-May-99	0.15	0.561					1.303				
7-May-99	0.30	0.617					1.303				
8-May-99	0.05	0.503					1.303				
9-May-99	0.04	0.439					1.150				
10-May-99	0.04	0.399					1.150				
11-May-99	0.18	0.494					1.150				
12-May-99	0.00	0.422	76.3	0.045	59.0	0.035	1.150	12.1	0.020	23.0	0.037
13-May-99	0.23	0.421					1.564				
14-May-99	0.19	0.458					1.564				
15-May-99	0.00	0.409					1.564				
16-May-99	0.01	0.483					1.564				
17-May-99	0.35	0.603					1.561				
18-May-99	0.03	0.548					1.561				
19-May-99	0.00	0.492	70.0	0.049	67.0	0.046	1.561				
20-May-99	0.00	0.401					0.000				
21-May-99	0.00	0.376					0.000				
22-May-99	0.00	0.376					0.000				
23-May-99	0.00	0.387					0.000				
24-May-99	0.00	0.380					0.000				
25-May-99	0.00	0.363					0.000				
26-May-99	0.00	0.355	318.0	0.159	272.5	0.136	0.000				
27-May-99	0.00	0.361					0.000				
28-May-99	0.00	0.346					0.000				
29-May-99	0.00	0.343					0.000				
30-May-99	0.00	0.320					0.000				
31-May-99	0.01	0.384					0.000				
Monthly Totals	2.02	13.493					27.253				
Monthly Avg.			137.2	0.074	114.4	0.062		14.2	0.028	22.1	0.042
Weekly Avg.			318.0	0.159	272.5	0.136		16.3	0.036	23.0	0.046

May '99 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	14.2	***30***	16.3	***45***	N/A	**N/A**
TSS (mg/l)	22.1	***50***	23.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	164.1	***500***	212	***750***	212	***1000***
TSS (lb/day)	247.6	***830***	275	***1200***	275	***1700***
BOD_5 Removal	90%	***85% Monthly Avg.***				
TSS Removal	81%	***65% Monthly Avg.***				

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From April 1999 to April 2000	**Average =**	**5919**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jun-99	0.02	0.387					0.000				
2-Jun-99	0.00	0.383	200.6	0.108	237.8	0.128	0.000				
3-Jun-99	0.00	0.365					0.000				
4-Jun-99	0.00	0.385					0.000				
5-Jun-99	0.12	0.342					0.000				
6-Jun-99	0.13	0.416					0.000				
7-Jun-99	0.00	0.405					0.000				
8-Jun-99	0.14	0.376					0.000				
9-Jun-99	0.00	0.357	53.9	0.027	68.0	0.034	0.000				
10-Jun-99	0.00	0.352					0.000				
11-Jun-99	0.00	0.352					0.000				
12-Jun-99	0.00	0.366					0.000				
13-Jun-99	0.00	0.367					0.000				
14-Jun-99	0.00	0.373					0.000				
15-Jun-99	0.00	0.352					0.000				
16-Jun-99	0.00	0.352	155.3	0.077	197.1	0.098	0.000				
17-Jun-99	0.00	0.347					0.000				
18-Jun-99	0.00	0.342					0.000				
19-Jun-99	0.00	0.347					0.000				
20-Jun-99	0.08	0.505					0.000				
21-Jun-99	0.25	0.414					0.000				
22-Jun-99	0.00	0.372					0.000				
23-Jun-99	0.00	0.353	207.3	0.103	224.4	0.112	0.000				
24-Jun-99	0.35	0.389					0.000				
25-Jun-99	0.10	0.361					0.000				
26-Jun-99	0.00	0.356					0.000				
27-Jun-99	0.00	0.365					0.000				
28-Jun-99	0.00	0.371					0.000				
29-Jun-99	0.00	0.365					0.000				
30-Jun-99	0.03	0.349					0.000				
Monthly Totals	1.22	11.166					0.000				
Monthly Avg.			154.3	0.079	181.8	0.093		0.0	0.000	0.0	0.000
Weekly Avg.			207.3	0.108	237.8	0.128		0.0	0.000	0.0	0.000

June '99 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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	1999 Population =	5803
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2000 Population =	6035
From April 1999 to April 2000	**Average =**	**5919**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jul-99	0.00	0.356	146.6	0.074	141.7	0.071	0.000				
2-Jul-99	0.10	0.381					0.000				
3-Jul-99	0.05	0.369					0.000				
4-Jul-99	0.13	0.364					0.000				
5-Jul-99	0.00	0.375					0.000				
6-Jul-99	0.00	0.374					0.000				
7-Jul-99	0.00	0.354	312.6	0.156	238.8	0.119	0.000				
8-Jul-99	0.00	0.356					0.000				
9-Jul-99	0.00	0.354					0.000				
10-Jul-99	0.00	0.358					0.000				
11-Jul-99	0.00	0.358					0.000				
12-Jul-99	0.00	0.370					0.000				
13-Jul-99	0.00	0.367					0.000				
14-Jul-99	0.00	0.362	131.9	0.067	122.2	0.062	0.000				
15-Jul-99	0.00	0.362					0.000				
16-Jul-99	0.00	0.345					0.000				
17-Jul-99	0.00	0.363					0.000				
18-Jul-99	0.00	0.386					0.000				
19-Jul-99	0.00	0.372					0.000				
20-Jul-99	0.00	0.363					0.000				
21-Jul-99	0.00	0.370	282.3	0.147	330.6	0.172	0.000				
22-Jul-99	0.00	0.348					0.000				
23-Jul-99	0.00	0.351					0.000				
24-Jul-99	0.00	0.337					0.000				
25-Jul-99	0.00	0.361					0.000				
26-Jul-99	0.00	0.352					0.000				
27-Jul-99	0.00	0.370					0.000				
28-Jul-99	0.00	0.340	137.0	0.066	166.0	0.080	0.000				
29-Jul-99	0.00	0.357					0.000				
30-Jul-99	0.00	0.330					0.000				
31-Jul-99	0.00	0.336					0.000				
Monthly Totals	0.28	11.141					0.000				
Monthly Avg.			202.1	0.102	199.9	0.101		0.0	0.000	0.0	0.000
Weekly Avg.			312.6	0.156	330.6	0.172		0.0	0.000	0.0	0.000

July '99 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 1999 to April 2000

1999 Population =	5803
2000 Population =	6035
Average =	**5919**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Aug-99	0.00	0.363					0.000				
2-Aug-99	0.00	0.341					0.000				
3-Aug-99	0.00	0.353	169.6	0.084	149.0	0.074	0.000				
4-Aug-99	0.00	0.353					0.000				
5-Aug-99	0.00	0.369					0.000				
6-Aug-99	0.00	0.374					0.000				
7-Aug-99	0.52	0.470					0.000				
8-Aug-99	0.04	0.404					0.000				
9-Aug-99	0.00	0.373					0.000				
10-Aug-99	0.00	0.380					0.000				
11-Aug-99	0.00	0.358	246.8	0.124	157.8	0.080	0.000				
12-Aug-99	0.00	0.360					0.000				
13-Aug-99	0.00	0.363					0.000				
14-Aug-99	0.10	0.345					0.000				
15-Aug-99	0.00	0.392					0.000				
16-Aug-99	0.00	0.380					0.000				
17-Aug-99	0.00	0.377					0.000				
18-Aug-99	0.00	0.356	9.2	0.005	65.0	0.033	0.000				
19-Aug-99	0.00	0.372					0.000				
20-Aug-99	0.00	0.387					0.000				
21-Aug-99	0.00	0.348					0.000				
22-Aug-99	0.00	0.384					0.000				
23-Aug-99	0.00	0.392					0.000				
24-Aug-99	0.00	0.416					0.000				
25-Aug-99	0.00	0.369	210.2	0.109	162.5	0.084	0.000				
26-Aug-99	0.00	0.344					0.000				
27-Aug-99	0.00	0.343					0.000				
28-Aug-99	0.00	0.361					0.000				
29-Aug-99	0.00	0.403					0.000				
30-Aug-99	0.02	0.390					0.000				
31-Aug-99	0.27	0.368					0.000				
Monthly Totals	0.95	11.588					0.000				
Monthly Avg.			159.0	0.081	133.6	0.068		0.0	0.000	0.0	0.000
Weekly Avg.			246.8	0.124	162.5	0.084		0.0	0.000	0.0	0.000

August '99 Effluent Summary

	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

CITY OF INDEPENDENCE, OREGON
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	1999 Population =	5803
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2000 Population =	6035
From April 1999 to April 2000	**Average =**	**5919**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Sep-99	0.00	0.376	110.6	0.059	114.3	0.061	0.000				
2-Sep-99	0.00	0.365					0.000				
3-Sep-99	0.00	0.366					0.000				
4-Sep-99	0.00	0.317					0.000				
5-Sep-99	0.00	0.357					0.000				
6-Sep-99	0.00	0.381					0.000				
7-Sep-99	0.00	0.383					0.000				
8-Sep-99	0.00	0.295	194.6	0.081	220.7	0.092	0.000				
9-Sep-99	0.00	0.372					0.000				
10-Sep-99	0.00	0.458					0.000				
11-Sep-99	0.00	0.391					0.000				
12-Sep-99	0.00	0.387					0.000				
13-Sep-99	0.00	0.372					0.000				
14-Sep-99	0.00	0.545					0.000				
15-Sep-99	0.00	0.566	168.5	0.134	223.7	0.178	0.000				
16-Sep-99	0.00	0.577					0.000				
17-Sep-99	0.00	0.383					0.000				
18-Sep-99	0.00	0.482					0.000				
19-Sep-99	0.00	0.552					0.000				
20-Sep-99	0.00	0.295					0.000				
21-Sep-99	0.00	0.362					0.000				
22-Sep-99	0.00	0.349	241.5	0.119	134.0	0.066	0.000				
23-Sep-99	0.02	0.373					0.000				
24-Sep-99	0.00	0.419					0.000				
25-Sep-99	0.03	0.415					0.000				
26-Sep-99	0.00	0.441					0.000				
27-Sep-99	0.00	0.279					0.000				
28-Sep-99	0.00	0.223					0.000				
29-Sep-99	0.00	0.311	290.7	0.127	212.5	0.093	0.000				
30-Sep-99	0.00	0.354					0.000				
Monthly Totals	0.05	11.746					0.000				
Monthly Avg.			201.2	0.104	181.0	0.098		0.0	0.000	0.0	0.000
Weekly Avg.			290.7	0.134	223.7	0.178		0.0	0.000	0.0	0.000

Sept '99 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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	1999 Population =	5803
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2000 Population =	6035
From April 1999 to April 2000	**Average =**	**5919**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Oct-99	0.00	0.331					0.000				
2-Oct-99	0.00	0.329					0.000				
3-Oct-99	0.00	0.373					0.000				
4-Oct-99	0.00	0.348					0.000				
5-Oct-99	0.00	0.429					0.000				
6-Oct-99	0.19	0.356	126.9	0.064	108.6	0.054	0.000				
7-Oct-99	0.00	0.363					0.000				
8-Oct-99	0.09	0.366					0.000				
9-Oct-99	0.00	0.366					0.000				
10-Oct-99	0.00	0.391					0.000				
11-Oct-99	0.00	0.364					0.000				
12-Oct-99	0.00	0.349					0.000				
13-Oct-99	0.00	0.344	282.6	0.137	250.0	0.121	0.000				
14-Oct-99	0.00	0.346					0.000				
15-Oct-99	0.00	0.337					0.000				
16-Oct-99	0.00	0.341					0.000				
17-Oct-99	0.00	0.388					0.000				
18-Oct-99	0.00	0.348					0.000				
19-Oct-99	0.00	0.359					0.000				
20-Oct-99	0.00	0.324	169.5	0.077	118.3	0.054	0.000				
21-Oct-99	0.00	0.364					0.000				
22-Oct-99	0.00	0.322					0.000				
23-Oct-99	0.00	0.366					0.000				
24-Oct-99	0.00	0.398					0.000				
25-Oct-99	0.08	0.432					0.000				
26-Oct-99	0.08	0.370					0.000				
27-Oct-99	1.19	0.936	51.3	0.068	82.0	0.108	0.000				
28-Oct-99	1.20	0.678					0.000				
29-Oct-99	0.08	0.324					0.000				
30-Oct-99	0.00	0.416					0.000				
31-Oct-99	0.22	0.438					0.000				
Monthly Totals	3.13	12.196					0.000				
Monthly Avg.			157.6	0.086	139.7	0.084		0.0	0.000	0.0	0.000
Weekly Avg.			282.6	0.137	250.0	0.121		0.0	0.000	0.0	0.000

Oct '99 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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J.O. INDP0008

	1999 Population =	5803
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2000 Population =	6035
From April 1999 to April 2000	**Average =**	**5919**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Nov-99	0.00	0.376					0.000				
2-Nov-99	0.00	0.381					0.000				
3-Nov-99	0.01	0.386	76.5	0.042	42.0	0.023	0.000				
4-Nov-99	0.07	0.371					0.000				
5-Nov-99	0.36	1.046					0.000				
6-Nov-99	0.00	0.572					0.000				
7-Nov-99	0.50	0.505					0.000				
8-Nov-99	0.50	0.689					0.000				
9-Nov-99	0.42	0.749	80.2	0.085	100.0	0.106	0.000				
10-Nov-99	1.08	1.146					0.000				
11-Nov-99	0.77	0.974					0.000				
12-Nov-99	0.61	0.791					0.000				
13-Nov-99	0.00	0.539					0.000				
14-Nov-99	0.00	0.493					0.000				
15-Nov-99	0.18	0.419					0.000				
16-Nov-99	0.26	0.602					0.000				
17-Nov-99	0.06	0.461	137.9	0.090	129.6	0.084	1.200	81.7	0.138	54.0	0.091
18-Nov-99	0.02	0.432					1.950				
19-Nov-99	0.44	0.780					1.900				
20-Nov-99	0.00	0.729					1.900				
21-Nov-99	0.00	0.658					1.741				
22-Nov-99	0.59	0.887					1.741				
23-Nov-99	0.30	0.797	34.3	0.039	25.0	0.028	2.000	36.1	0.102	50.0	0.141
24-Nov-99	0.72	0.794					1.741				
25-Nov-99	1.10	3.814					1.840				
26-Nov-99	1.09	1.529					1.840				
27-Nov-99	0.00	0.829					1.840				
28-Nov-99	0.00	0.681					1.650				
29-Nov-99	0.11	0.646					1.741				
30-Nov-99	0.23	0.635					1.741				
Monthly Totals	9.42	23.711					24.825				
Monthly Avg.			82.2	0.064	74.2	0.060		58.9	0.120	52.0	0.116
Weekly Avg.			137.9	0.090	129.6	0.106		81.7	0.138	54.0	0.141

Nov '99 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	58.9	***30***	81.7	***45***	N/A	**N/A**
TSS (mg/l)	52.0	***50***	54.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	709.9	***500***	818	***750***	818	***1000***
TSS (lb/day)	687.2	***830***	834	***1200***	834	***1700***
BOD_5 Removal	28%	***85% Monthly Avg.***				
TSS Removal	30%	***65% Monthly Avg.***				

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	1999 Population =	5803
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2000 Population =	6035
From April 1999 to April 2000	**Average =**	**5919**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Dec-99	0.13	1.183	82.9	0.138	173.0	0.288	1.741	42.2	0.104	52.0	0.128
2-Dec-99	1.17	1.527					1.834				
3-Dec-99	0.03	1.397					1.834				
4-Dec-99	1.03	1.505					1.834				
5-Dec-99	0.00	0.792					1.834				
6-Dec-99	0.00	1.736					1.834				
7-Dec-99	0.84	1.543					3.765				
8-Dec-99	0.18	1.051	74.2	0.110	79.0	0.117	3.765	34.7	0.184	45.0	0.239
9-Dec-99	0.23	0.981					3.765				
10-Dec-99	0.09	0.739					3.765				
11-Dec-99	0.00	0.633					3.765				
12-Dec-99	0.41	1.076					3.765				
13-Dec-99	0.41	1.969					3.765				
14-Dec-99	1.41	3.223					3.765				
15-Dec-99	0.74	2.310	25.8	0.084	44.0	0.143	3.411	28.0	0.135	30.0	0.144
16-Dec-99	0.61	2.127					3.411				
17-Dec-99	0.56	1.847					2.848				
18-Dec-99	0.00	1.177					2.848				
19-Dec-99	0.04	0.896					2.848				
20-Dec-99	0.00	0.732					2.848				
21-Dec-99	0.00	0.666	28.5	0.027	53.0	0.050	2.848	27.8	0.112	60.0	0.241
22-Dec-99	0.00	0.650					2.848				
23-Dec-99	0.00	0.558					1.561				
24-Dec-99	0.00	0.539					1.561				
25-Dec-99	0.00	0.449					1.561				
26-Dec-99	0.00	0.484					1.510				
27-Dec-99	0.00	0.456					1.387				
28-Dec-99	0.00	0.473	77.6	0.052	116.0	0.077	1.387	9.6	0.019	26.0	0.051
29-Dec-99	0.00	0.431					1.303				
30-Dec-99	0.00	0.458					1.303				
31-Dec-99	0.00	0.503					1.303				
Monthly Totals	7.88	34.111			465.0		77.817				
Monthly Avg.			57.8	0.082	93.0	0.135		28.5	0.110	42.6	0.160
Weekly Avg.			82.9	0.138	173.0	0.288		42.2	0.184	60.0	0.241

Dec '99 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	28.5	***30***	42.2	***45***	N/A	**N/A**
TSS (mg/l)	42.6	***50***	60.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	654.0	***500***	1090	***750***	1090	***1000***
TSS (lb/day)	949.5	***830***	1425	***1200***	1425	***1700***
BOD_5 Removal	51%	***85% Monthly Avg.***				
TSS Removal	54%	***65% Monthly Avg.***				

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	1999 Population =	5803
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2000 Population =	6035
From April 1999 to April 2000	**Average =**	**5919**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jan-00	0.38	0.731					1.303				
2-Jan-00	0.38	0.943					1.303				
3-Jan-00	0.39	1.139					1.303				
4-Jan-00	0.86	1.365					0.600				
5-Jan-00	0.10	0.784	63.2	0.070	61.0	0.067	0.600	9.4	0.008	34.0	0.029
6-Jan-00	0.08	0.739					0.600				
7-Jan-00	0.02	0.644					0.600				
8-Jan-00	0.00	0.682					0.600				
9-Jan-00	0.44	1.098					0.600				
10-Jan-00	0.44	1.496					1.303				
11-Jan-00	0.31	1.799					1.303				
12-Jan-00	0.85	3.380	41.5	0.198	42.0	0.200	1.303	12.5	0.023	33.0	0.061
13-Jan-00	0.99	2.707					1.303				
14-Jan-00	0.49	1.901					1.303				
15-Jan-00	0.00	1.696					1.303				
16-Jan-00	0.38	1.602					1.303				
17-Jan-00	0.38	1.096					1.303				
18-Jan-00	0.00	0.874					1.303				
19-Jan-00	0.23	1.006	17.2	0.024	22.5	0.032	1.303	4.0	0.007	23.0	0.042
20-Jan-00	0.37	1.164					1.303				
21-Jan-00	0.44	1.050					1.303				
22-Jan-00	0.00	0.758					1.303				
23-Jan-00	0.23	1.144					1.303				
24-Jan-00	0.23	1.700					1.303				
25-Jan-00	0.48	1.425					1.303				
26-Jan-00	0.02	0.886	37.5	0.047	95.5	0.119	1.303	6.0	0.011	34.0	0.062
27-Jan-00	0.00	0.783					1.561				
28-Jan-00	0.00	0.688					1.561				
29-Jan-00	0.00	0.651					1.561				
30-Jan-00	0.02	0.666					1.561				
31-Jan-00	1.27	1.707					1.561				
Monthly Totals	9.78	38.304					37.465				
Monthly Avg.			39.9	0.085	55.3	0.105		8.0	0.012	31.0	0.048
Weekly Avg.			63.2	0.198	95.5	0.200		12.5	0.023	34.0	0.062

Jan '00 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	8.0	***30***	12.5	***45***	N/A	**N/A**
TSS (mg/l)	31.0	***50***	34.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	72.9	***500***	136	***750***	136	***1000***
TSS (lb/day)	287.0	***830***	369	***1200***	369	***1700***
BOD_5 Removal	80%	***85% Monthly Avg.***				
TSS Removal	44%	***65% Monthly Avg.***				

CITY OF INDEPENDENCE, OREGON
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	1999 Population =	5803
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2000 Population =	6035
From April 1999 to April 2000	**Average =**	**5919**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Feb-00	1.23	2.228					1.561				
2-Feb-00	0.11	1.196	139.3	0.235	133.0	0.224	1.650	6.5	0.015	34.0	0.079
3-Feb-00	0.00	0.961					1.561				
4-Feb-00	0.02	0.825					1.561				
5-Feb-00	0.12	0.848					1.561				
6-Feb-00	0.11	0.752					1.561				
7-Feb-00	0.00	0.775					1.561				
8-Feb-00	0.63	1.489					1.561				
9-Feb-00	0.00	0.877	53.3	0.066	48.0	0.059	1.561	4.2	0.009	44.0	0.097
10-Feb-00	0.00	0.877					1.561				
11-Feb-00	0.29	1.669					1.561				
12-Feb-00	0.55	1.962					1.561				
13-Feb-00	0.55	2.292					1.561				
14-Feb-00	0.56	2.663					1.561				
15-Feb-00	0.28	1.621					1.561				
16-Feb-00	0.00	1.085	82.9	0.127	63.0	0.096	1.561	7.6	0.017	47.0	0.103
17-Feb-00	0.00	0.853					1.561				
18-Feb-00	0.00	0.797					1.561				
19-Feb-00	0.00	0.759					1.561				
20-Feb-00	0.02	0.777					1.561				
21-Feb-00	0.05	0.871					1.650				
22-Feb-00	0.46	1.026					1.650				
23-Feb-00	0.10	0.809	54.2	0.062	47.0	0.054	1.650	10.6	0.025	35.0	0.081
24-Feb-00	0.03	0.736					1.650				
25-Feb-00	0.21	1.128					1.650				
26-Feb-00	1.00	3.537					1.650				
27-Feb-00	0.54	1.623					1.650				
28-Feb-00	0.02	1.457					1.650				
29-Feb-00	0.71	1.293					1.650				
Monthly Totals	7.59	37.786					46.159				
Monthly Avg.			82.4	0.122	72.8	0.108		7.2	0.016	40.0	0.090
Weekly Avg.			139.3	0.235	133.0	0.224		10.6	0.025	47.0	0.103

Feb '00 Effluent Summary

	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	7.2	***30***	10.6	***45***	N/A	**N/A**
TSS (mg/l)	40.0	***50***	47.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	97.2	***500***	146	***750***	146	***1000***
TSS (lb/day)	533.6	***830***	612	***1200***	612	***1700***
BOD_5 Removal	91%	***85% Monthly Avg.***				
TSS Removal	45%	***65% Monthly Avg.***				

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J.O. INDP0008

	1999 Population =	5803
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	2000 Population =	6035
From April 1999 to April 2000	**Average =**	**5919**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Mar-00	0.00	0.972	56.2	0.077	36.0	0.049	1.650	0.0	0.000	31.0	0.072
2-Mar-00	0.23	1.134					1.650				
3-Mar-00	0.00	1.136					1.650				
4-Mar-00	0.44	2.869					1.650				
5-Mar-00	0.44	1.302					1.650				
6-Mar-00	0.04	0.950					1.650				
7-Mar-00	0.00	0.849					1.650				
8-Mar-00	0.15	0.741	89.6	0.094	54.0	0.056	1.650	18.0	0.042	30.0	0.070
9-Mar-00	0.00	0.676					1.650				
10-Mar-00	0.12	0.811					1.741				
11-Mar-00	0.18	1.047					1.741				
12-Mar-00	0.18	0.800					1.741				
13-Mar-00	0.18	1.387					1.741				
14-Mar-00	0.26	0.993					1.741				
15-Mar-00	0.00	0.898	50.0	0.063	32.0	0.040	1.741	6.2	0.015	30.0	0.074
16-Mar-00	0.22	0.856					1.741				
17-Mar-00	0.05	0.785					1.741				
18-Mar-00	0.09	0.713					1.741				
19-Mar-00	0.09	0.705					1.741				
20-Mar-00	0.09	0.623					1.650				
21-Mar-00	0.01	0.578					1.650				
22-Mar-00	0.22	0.574	88.4	0.071	80.0	0.065	1.650	32.0	0.074	35.0	0.081
23-Mar-00	0.01	0.543					1.561				
24-Mar-00	0.00	0.400					1.561				
25-Mar-00	0.00	0.338					1.561				
26-Mar-00	0.00	0.590					1.561				
27-Mar-00	0.10	0.616					1.561				
28-Mar-00	0.01	0.629					1.561				
29-Mar-00	0.00	0.629	59.5	0.053	56.0	0.050	1.561	11.8	0.026	33.0	0.073
30-Mar-00	0.00	0.517					1.473				
31-Mar-00	0.00	0.486					1.473				
Monthly Totals	3.11	26.147					51.083				
Monthly Avg.			68.7	0.072	51.6	0.052		13.6	0.031	31.8	0.074
Weekly Avg.			89.6	0.094	80.0	0.065		32.0	0.074	35.0	0.081

March '00 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	13.6	***30***	32.0	***45***	N/A	**N/A**
TSS (mg/l)	31.8	***50***	35.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	186.3	***500***	440	***750***	440	***1000***
TSS (lb/day)	437.3	***830***	482	***1200***	482	***1700***
BOD_5 Removal	80%	***85% Monthly Avg.***				
TSS Removal	38%	***65% Monthly Avg.***				

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 1999 to April 2000

1999 Population =	5803
2000 Population =	6035
Average =	**5919**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Apr-00	0.00	0.415					1.473				
2-Apr-00	0.00	0.460					1.473				
3-Apr-00	0.00	0.421					1.473				
4-Apr-00	0.00	0.440					1.000				
5-Apr-00	0.00	0.473	87.1	0.058	74.7	0.050	1.000	14.3	0.020	46.0	0.065
6-Apr-00	0.03	0.420					0.912				
7-Apr-00	0.00	0.543					0.912				
8-Apr-00	0.03	0.487					0.912				
9-Apr-00	0.00	0.450					0.912				
10-Apr-00	0.00	0.484					0.912				
11-Apr-00	0.00	0.406					0.912				
12-Apr-00	0.00	0.419	62.5	0.037	128.0	0.076	0.912	15.7	0.020	40.0	0.051
13-Apr-00	0.81	0.941					0.912				
14-Apr-00	0.03	0.731					0.912				
15-Apr-00	0.04	0.636					0.912				
16-Apr-00	0.04	0.551					0.912				
17-Apr-00	0.05	0.585					0.900				
18-Apr-00	0.00	0.452					0.769				
19-Apr-00	0.00	0.463	91.8	0.060	36.0	0.023	0.769	7.2	0.008	37.0	0.040
20-Apr-00	0.00	0.470					0.769				
21-Apr-00	0.00	0.546					0.769				
22-Apr-00	0.12	0.459					0.769				
23-Apr-00	0.12	0.474					0.769				
24-Apr-00	0.05	0.424					0.769				
25-Apr-00	0.18	0.421					0.769				
26-Apr-00	0.00	0.389	21.6	0.012	163.0	0.089	0.701	3.9	0.004	34.0	0.034
27-Apr-00	0.04	0.448					0.701				
28-Apr-00	0.20	0.564					0.701				
29-Apr-00	0.00	0.586					0.701				
30-Apr-00	0.00	0.467					0.701				
Monthly Totals	1.74	15.025					27.008				
Monthly Avg.			65.8	0.042	100.4	0.060		10.3	0.013	39.3	0.047
Weekly Avg.			91.8	0.060	163.0	0.089		15.7	0.020	46.0	0.065

Ap '00 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	10.3	***30***	15.7	***45***	N/A	**N/A**
TSS (mg/l)	39.3	***50***	46.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	76.9	***500***	119	***750***	119	***1000***
TSS (lb/day)	281.0	***830***	384	***1200***	384	***1700***
BOD_5 Removal	84%	***85% Monthly Avg.***				
TSS Removal	61%	***65% Monthly Avg.***				

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	1998 Population =	5571
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	1999 Population =	5803
From April 1998 to April 1999	**Average =**	**5687**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Apr-98	0.00	0.670	203.7	0.200	75.5	0.074	1.928	17.4	0.049	23.3	0.066
2-Apr-98	0.00	0.735					1.928				
3-Apr-98	0.12	0.672					1.928				
4-Apr-98	0.03	0.616					1.928				
5-Apr-98	0.03	0.585					1.928				
6-Apr-98	0.05	0.595					1.834				
7-Apr-98	0.02	0.534					1.834				
8-Apr-98	0.00	0.541	450.0	0.357	128.6	0.102	1.834	15.3	0.041	23.8	0.064
9-Apr-98	0.05	0.676					1.834				
10-Apr-98	0.29	1.114					1.834				
11-Apr-98	0.22	0.904					1.634				
12-Apr-98	0.12	0.681					1.600				
13-Apr-98	0.11	0.597					1.600				
14-Apr-98	0.00	0.562					1.561				
15-Apr-98	0.00	0.501	366.5	0.269	193.5	0.142	1.561	18.5	0.042	26.5	0.061
16-Apr-98	0.00	0.513					1.650				
17-Apr-98	0.00	0.451					1.650				
18-Apr-98	0.00	0.496					1.650				
19-Apr-98	0.00	0.475					1.561				
20-Apr-98	0.00	0.504					1.561				
21-Apr-98	0.00	0.447					1.561				
22-Apr-98	0.00	0.516	183.9	0.139	142.9	0.108	1.561	9.9	0.023	196.2	0.449
23-Apr-98	0.16	0.607					1.387				
24-Apr-98	0.05	0.480					1.387				
25-Apr-98	0.00	0.423					1.387				
26-Apr-98	0.00	0.471					1.387				
27-Apr-98	0.00	0.410					1.387				
28-Apr-98	0.00	0.442					1.387				
29-Apr-98	0.00	0.435	314.1	0.200	234.1	0.149	1.221	16.6	0.030	51.0	0.091
30-Apr-98	0.00	0.426					1.221				
Monthly Totals	1.25	17.079					48.724				
Monthly Avg.			303.6	0.233	154.9	0.115		15.5	0.037	64.2	0.146
Weekly Avg.			450.0	0.357	234.1	0.149		18.5	0.049	196.2	0.449

Ap '98 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	15.5	***30***	18.5	***45***	N/A	**N/A**
TSS (mg/l)	64.2	***50***	196.2	***80***	N/A	**N/A**
BOD_5 (lb/day)	210.5	***500***	280	***750***	280	***1000***
TSS (lb/day)	831.5	***830***	2554	***1200***	2554	***1700***
BOD_5 Removal	95%	***85% Monthly Avg.***				
TSS Removal	59%	***65% Monthly Avg.***				

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J.O. INDP0008

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	1999 Population =	5803
From April 1998 to April 1999	**Average =**	**5687**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-May-98	0.00	0.498					1.221				
2-May-98	0.37	0.520					1.221				
3-May-98	0.00	0.496					1.221				
4-May-98	0.00	0.462					2.000				
5-May-98	0.00	0.474					1.834				
6-May-98	0.00	0.409	265.8	0.159	158.3	0.095	1.834	9.6	0.026	14.5	0.039
7-May-98	0.10	0.429					1.741				
8-May-98	0.01	0.678					1.741				
9-May-98	0.00	0.459					1.650				
10-May-98	0.00	0.483					1.650				
11-May-98	0.00	0.436					1.561				
12-May-98	0.22	0.820					1.561				
13-May-98	0.19	0.813	179.1	0.214	77.8	0.093	1.561	18.7	0.043	31.7	0.073
14-May-98	0.20	0.804					1.387				
15-May-98	0.16	0.648					1.387				
16-May-98	0.47	1.179					1.387				
17-May-98	0.58	1.002					1.090				
18-May-98	0.00	0.670					1.090				
19-May-98	0.71	1.443					1.090				
20-May-98	0.40	2.572	31.4	0.118	54.2	0.204	0.000				
21-May-98	1.23	2.106					0.000				
22-May-98	0.00	1.018					0.000				
23-May-98	0.22	0.799					0.000				
24-May-98	0.33	1.158					0.000				
25-May-98	0.23	1.186					0.000				
26-May-98	0.04	0.928					0.000				
27-May-98	0.00	0.742	368.1	0.401	80.0	0.087	0.000				
28-May-98	0.00	0.651					0.000				
29-May-98	0.29	1.231					0.000				
30-May-98	0.05	0.804					0.000				
31-May-98	0.00	0.652					0.000				
Monthly Totals	5.80	26.570					28.227				
Monthly Avg.			211.1	0.223	92.6	0.120		14.2	0.034	23.1	0.056
Weekly Avg.			368.1	0.401	158.3	0.204		18.7	0.043	31.7	0.073

May '98 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	14.2	***30***	18.7	***45***	N/A	**N/A**
TSS (mg/l)	23.1	***50***	31.7	***80***	N/A	**N/A**
BOD_5 (lb/day)	195.1	***500***	243	***750***	243	***1000***
TSS (lb/day)	317.2	***830***	413	***1200***	413	***1700***
BOD_5 Removal	93%	***85% Monthly Avg.***				
TSS Removal	75%	***65% Monthly Avg.***				

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From April 1998 to April 1999	**Average =**	**5687**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jun-98	0.00	0.613					0.000				
2-Jun-98	0.00	0.559					0.000				
3-Jun-98	0.00	0.502	241.5	0.178	136.4	0.100	0.000				
4-Jun-98	0.00	0.486					0.000				
5-Jun-98	0.00	0.465					0.000				
6-Jun-98	0.00	0.475					0.000				
7-Jun-98	0.00	0.517					0.000				
8-Jun-98	0.00	0.432					0.000				
9-Jun-98	0.00	0.511					0.000				
10-Jun-98	0.26	0.804	213.7	0.252	106.7	0.126	0.000				
11-Jun-98	0.00	0.526					0.000				
12-Jun-98	0.00	0.432					0.000				
13-Jun-98	0.00	0.459					0.000				
14-Jun-98	0.00	0.423					0.000				
15-Jun-98	0.00	0.418					0.000				
16-Jun-98	0.00	0.385					0.000				
17-Jun-98	0.00	0.405	233.0	0.138	204.0	0.121	0.000				
18-Jun-98	0.00	0.426					0.000				
19-Jun-98	0.00	0.353					0.000				
20-Jun-98	0.00	0.405					0.000				
21-Jun-98	0.00	0.417					0.000				
22-Jun-98	0.00	0.410					0.000				
23-Jun-98	0.00	0.437					0.000				
24-Jun-98	0.50	0.720	39.7	0.042	41.0	0.043	0.000				
25-Jun-98	0.01	0.447					0.000				
26-Jun-98	0.06	0.434					0.000				
27-Jun-98	0.00	0.381					0.000				
28-Jun-98	0.00	0.438					0.000				
29-Jun-98	0.00	0.389					0.000				
30-Jun-98	0.00	0.420					0.000				
Monthly Totals	0.83	14.089					0.000				
Monthly Avg.			182.0	0.153	122.0	0.098		0.0	0.000	0.0	0.000
Weekly Avg.			241.5	0.252	204.0	0.126		0.0	0.000	0.0	0.000

June '98 Effluent Summary

	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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	1998 Population =	5571
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	1999 Population =	5803
From April 1998 to April 1999	**Average =**	**5687**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jul-98	0.03	0.408	238.5	0.143	211.8	0.127	0.000				
2-Jul-98	0.00	0.420					0.000				
3-Jul-98	0.00	0.377					0.000				
4-Jul-98	0.00	0.425					0.000				
5-Jul-98	0.00	0.425					0.000				
6-Jul-98	0.00	0.413					0.000				
7-Jul-98	0.00	0.437					0.000				
8-Jul-98	0.00	0.404	321.6	0.191	247.1	0.146	0.000				
9-Jul-98	0.00	0.425					0.000				
10-Jul-98	0.00	0.401					0.000				
11-Jul-98	0.00	0.408					0.000				
12-Jul-98	0.00	0.384					0.000				
13-Jul-98	0.00	0.408					0.000				
14-Jul-98	0.00	0.404					0.000				
15-Jul-98	0.00	0.399	260.7	0.153	204.4	0.120	0.000				
16-Jul-98	0.00	0.432					0.000				
17-Jul-98	0.00	0.384					0.000				
18-Jul-98	0.00	0.375					0.000				
19-Jul-98	0.00	0.399					0.000				
20-Jul-98	0.00	0.396					0.000				
21-Jul-98	0.00	0.395					0.000				
22-Jul-98	0.00	0.379	133.1	0.074	67.0	0.037	0.000				
23-Jul-98	0.00	0.363					0.000				
24-Jul-98	0.00	0.408					0.000				
25-Jul-98	0.00	0.368					0.000				
26-Jul-98	0.00	0.389					0.000				
27-Jul-98	0.00	0.413					0.000				
28-Jul-98	0.00	0.422					0.000				
29-Jul-98	0.00	0.389	315.0	0.180	197.6	0.113	0.000				
30-Jul-98	0.06	0.440					0.000				
31-Jul-98	0.00	0.363					0.000				
Monthly Totals	0.09	12.453					0.000				
Monthly Avg.			253.8	0.148	185.6	0.109		0.0	0.000	0.0	0.000
Weekly Avg.			321.6	0.191	247.1	0.146		0.0	0.000	0.0	0.000

July '98 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	1999 Population =	5803
From April 1998 to April 1999	**Average =**	**5687**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Aug-98	0.00	0.368					0.000				
2-Aug-98	0.00	0.389					0.000				
3-Aug-98	0.00	0.420					0.000				
4-Aug-98	0.00	0.411					0.000				
5-Aug-98	0.00	0.408	291.6	0.174	234.0	0.140	0.000				
6-Aug-98	0.00	0.387					0.000				
7-Aug-98	0.00	0.372					0.000				
8-Aug-98	0.00	0.393					0.000				
9-Aug-98	0.00	0.335					0.000				
10-Aug-98	0.00	0.356					0.000				
11-Aug-98	0.00	0.372					0.000				
12-Aug-98	0.00	0.486	286.4	0.204	240.0	0.171	0.000				
13-Aug-98	0.00	0.486					0.000				
14-Aug-98	0.00	0.426					0.000				
15-Aug-98	0.00	0.435					0.000				
16-Aug-98	0.00	0.465					0.000				
17-Aug-98	0.00	0.411					0.000				
18-Aug-98	0.00	0.368					0.000				
19-Aug-98	0.00	0.360	146.2	0.077	111.2	0.059	0.000				
20-Aug-98	0.00	0.351					0.000				
21-Aug-98	0.00	0.342					0.000				
22-Aug-98	0.00	0.356					0.000				
23-Aug-98	0.00	0.339					0.000				
24-Aug-98	0.00	0.363					0.000				
25-Aug-98	0.00	0.371					0.000				
26-Aug-98	0.00	0.363	144.9	0.077	192.4	0.102	0.000				
27-Aug-98	0.00	0.359					0.000				
28-Aug-98	0.00	0.333					0.000				
29-Aug-98	0.00	0.347					0.000				
30-Aug-98	0.00	0.404					0.000				
31-Aug-98	0.00	0.335					0.000				
Monthly Totals	0.00	11.911					0.000				
Monthly Avg.			217.3	0.133	194.4	0.118		0.0	0.000	0.0	0.000
Weekly Avg.			291.6	0.204	240.0	0.171		0.0	0.000	0.0	0.000

August '98 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	1999 Population =	5803
From April 1998 to April 1999	**Average =**	**5687**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Sep-98	0.00	0.366					0.000				
2-Sep-98	0.00	0.335	155.2	0.076	95.0	0.047	0.000				
3-Sep-98	0.00	0.342					0.000				
4-Sep-98	0.00	0.330					0.000				
5-Sep-98	0.00	0.335					0.000				
6-Sep-98	0.00	0.306					0.000				
7-Sep-98	0.00	0.320					0.000				
8-Sep-98	0.00	0.314					0.000				
9-Sep-98	0.00	0.315	258.0	0.119	341.5	0.158	0.000				
10-Sep-98	0.00	0.287					0.000				
11-Sep-98	0.00	0.335					0.000				
12-Sep-98	0.00	0.323					0.000				
13-Sep-98	0.00	0.363					0.000				
14-Sep-98	0.00	0.320					0.000				
15-Sep-98	0.00	0.359					0.000				
16-Sep-98	0.00	0.327	143.7	0.069	98.7	0.047	0.000				
17-Sep-98	0.56	0.354					0.000				
18-Sep-98	0.04	0.500					0.000				
19-Sep-98	0.00	0.381					0.000				
20-Sep-98	0.00	0.372					0.000				
21-Sep-98	0.00	0.339					0.000				
22-Sep-98	0.00	0.344					0.000				
23-Sep-98	0.00	0.363	152.7	0.081	294.0	0.157	0.000				
24-Sep-98	0.00	0.410					0.000				
25-Sep-98	0.11	0.336					0.000				
26-Sep-98	0.00	0.356					0.000				
27-Sep-98	0.00	0.384					0.000				
28-Sep-98	0.00	0.336					0.000				
29-Sep-98	0.00	0.344					0.000				
30-Sep-98	0.00	0.336					0.000				
Monthly Totals	0.71	10.432					0.000				
Monthly Avg.			177.4	0.086	207.3	0.102		0.0	0.000	0.0	0.000
Weekly Avg.			258.0	0.119	341.5	0.158		0.0	0.000	0.0	0.000

Sept '98 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

CITY OF INDEPENDENCE, OREGON
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J.O. INDP0008

	1998 Population =	5571
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	1999 Population =	5803
From April 1998 to April 1999	**Average =**	**5687**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Oct-98	0.00	0.336	329.4	0.162	328.3	0.162	0.000				
2-Oct-98	0.35	0.438					0.000				
3-Oct-98	0.06	0.369					0.000				
4-Oct-98	0.15	0.398					0.000				
5-Oct-98	0.00	0.353					0.000				
6-Oct-98	0.00	0.324					0.000				
7-Oct-98	0.00	0.312	249.5	0.114	187.9	0.086	0.000				
8-Oct-98	0.04	0.303					0.000				
9-Oct-98	0.98	0.569					0.000				
10-Oct-98	0.00	0.402					0.000				
11-Oct-98	0.00	0.426					0.000				
12-Oct-98	0.24	0.737					0.000				
13-Oct-98	0.49	0.477					0.000				
14-Oct-98	0.12	0.431	125.9	0.080	200.0	0.126	0.000				
15-Oct-98	0.15	0.408					0.000				
16-Oct-98	0.00	0.554					0.000				
17-Oct-98	0.00	0.473					0.000				
18-Oct-98	0.01	0.465					0.000				
19-Oct-98	0.00	0.453					0.000				
20-Oct-98	0.00	0.425					0.000				
21-Oct-98	0.00	0.441	96.7	0.063	99.0	0.064	0.000				
22-Oct-98	0.00	0.416					0.000				
23-Oct-98	0.02	0.432					0.000				
24-Oct-98	0.02	0.429					0.000				
25-Oct-98	0.00	0.407					0.000				
26-Oct-98	0.00	0.396					0.000				
27-Oct-98	0.19	0.608					0.000				
28-Oct-98	0.08	0.462	137.0	0.093	200.0	0.136	0.000				
29-Oct-98	0.02	0.414					0.000				
30-Oct-98	0.00	0.407					0.000				
31-Oct-98	0.06	0.465					0.000				
Monthly Totals	2.98	13.530					0.000				
Monthly Avg.			187.7	0.102	203.0	0.115		0.0	0.000	0.0	0.000
Weekly Avg.			329.4	0.162	328.3	0.162		0.0	0.000	0.0	0.000

Oct '98 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	0.0	***30***	0.0	***45***	N/A	**N/A**
TSS (mg/l)	0.0	***50***	0.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	0.0	***500***	0	***750***	0	***1000***
TSS (lb/day)	0.0	***830***	0	***1200***	0	***1700***
BOD_5 Removal	N/A	***85% Monthly Avg.***				
TSS Removal	N/A	***65% Monthly Avg.***				

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 1998 to April 1999

1998 Population =	5571
1999 Population =	5803
Average =	**5687**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Nov-98	0.08	0.519					0.000				
2-Nov-98	0.14	0.434					0.000				
3-Nov-98	0.19	0.519					0.000				
4-Nov-98	0.23	0.984					0.000				
5-Nov-98	0.32	0.704	26.1	0.027	101.6	0.105	2.000	0.0	0.000	25.0	0.073
6-Nov-98	0.35	0.686					1.741				
7-Nov-98	0.27	0.549					1.741				
8-Nov-98	0.00	0.599					1.741				
9-Nov-98	0.10	0.432					1.741				
10-Nov-98	0.42	0.626					1.741				
11-Nov-98	0.00	0.552	66.5	0.054	73.7	0.060	2.000	14.5	0.043	12.0	0.035
12-Nov-98	0.00	0.524					1.741				
13-Nov-98	0.00	0.477					1.741				
14-Nov-98	0.00	0.396					1.741				
15-Nov-98	0.41	0.503					1.650				
16-Nov-98	0.41	0.554					1.561				
17-Nov-98	0.00	0.576					1.561				
18-Nov-98	0.18	0.608	40.4	0.036	44.0	0.039	1.561	15.5	0.035	17.6	0.040
19-Nov-98	0.25	0.584					1.561				
20-Nov-98	2.05	2.513					1.561				
21-Nov-98	1.14	1.820					1.561				
22-Nov-98	0.70	3.389					1.741				
23-Nov-98	0.81	2.075					1.741				
24-Nov-98	0.48	1.584	33.8	0.079	66.0	0.153	1.741	17.6	0.045	21.6	0.055
25-Nov-98	2.57	3.861					1.741				
26-Nov-98	1.71	2.405					1.741				
27-Nov-98	0.12	2.276					1.741				
28-Nov-98	0.40	1.149					1.741				
29-Nov-98	0.78	2.223					1.741				
30-Nov-98	0.95	3.312					2.000				
Monthly Totals	15.06	37.433					44.872				
Monthly Avg.			41.7	0.049	71.3	0.089		11.9	0.031	19.1	0.051
Weekly Avg.			66.5	0.079	101.6	0.153		17.6	0.045	25.0	0.073

Nov '98 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	11.9	***30***	17.6	***45***	N/A	**N/A**
TSS (mg/l)	19.1	***50***	25.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	174.8	***500***	256	***750***	256	***1000***
TSS (lb/day)	290.0	***830***	417	***1200***	417	***1700***
BOD_5 Removal	71%	***85% Monthly Avg.***				
TSS Removal	73%	***65% Monthly Avg.***				

CITY OF INDEPENDENCE, OREGON
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J.O. INDP0008

	1998 Population =	5571
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	1999 Population =	5803
From April 1998 to April 1999	**Average =**	**5687**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Dec-98	1.25	3.358					2.000				
2-Dec-98	1.52	2.419	5.8	0.021	37.5	0.133	4.000	3.0	0.018	14.3	0.084
3-Dec-98	0.12	1.415					4.000				
4-Dec-98	0.35	1.112					4.000				
5-Dec-98	0.63	2.057					4.000				
6-Dec-98	0.98	1.448					4.000				
7-Dec-98	0.57	1.926					4.000				
8-Dec-98	0.36	1.451					4.000				
9-Dec-98	0.00	1.491	36.4	0.080	90.5	0.198	4.000	12.5	0.073	51.0	0.299
10-Dec-98	0.06	0.801					4.000				
11-Dec-98	0.72	1.026					4.000				
12-Dec-98	0.33	1.005					4.000				
13-Dec-98	0.23	0.716					4.000				
14-Dec-98	0.00	0.693					4.000				
15-Dec-98	0.00	0.693					4.000				
16-Dec-98	0.00	0.603	36.4	0.032	64.0	0.057	2.000	3.0	0.009	13.6	0.040
17-Dec-98	0.00	0.657					2.000				
18-Dec-98	0.03	0.384					2.000				
19-Dec-98	0.00	0.402					2.000				
20-Dec-98	0.00	0.359					2.000				
21-Dec-98	0.03	0.336					1.741				
22-Dec-98	0.00	0.402	210.0	0.124	120.6	0.071	1.741	7.7	0.020	1.8	0.005
23-Dec-98	0.00	0.321					1.741				
24-Dec-98	0.21	0.543					1.741				
25-Dec-98	0.20	0.918					1.741				
26-Dec-98	0.15	0.779					1.741				
27-Dec-98	2.25	3.960					1.741				
28-Dec-98	2.68	4.731					2.000				
29-Dec-98	0.40	4.789					2.000				
30-Dec-98	0.04	4.244	35.4	0.220	30.0	0.187	2.000	7.7	0.023	9.0	0.026
31-Dec-98	0.32	3.450					2.000				
Monthly Totals	13.43	48.489					88.187				
Monthly Avg.			64.8	0.095	68.5	0.129		6.8	0.028	17.9	0.091
Weekly Avg.			210.0	0.220	120.6	0.198		12.5	0.073	51.0	0.299

Dec '98 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	6.8	***30***	12.5	***45***	N/A	**N/A**
TSS (mg/l)	17.9	***50***	51.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	161.5	***500***	417	***750***	417	***1000***
TSS (lb/day)	516.3	***830***	1701	***1200***	1701	***1700***
BOD_5 Removal	90%	***85% Monthly Avg.***				
TSS Removal	74%	***65% Monthly Avg.***				

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	1998 Population =	5571
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	1999 Population =	5803
From April 1998 to April 1999	**Average =**	**5687**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Jan-99	0.00	0.726					2.000				
2-Jan-99	0.00	0.304					2.000				
3-Jan-99	0.00	0.332					2.000				
4-Jan-99	0.00	0.583					2.000				
5-Jan-99	0.00	0.641					2.000				
6-Jan-99	0.04	0.546	28.8	0.023	30.0	0.024	2.000	5.3	0.016	14.0	0.041
7-Jan-99	0.02	0.512					2.000				
8-Jan-99	0.00	0.494					2.000				
9-Jan-99	0.00	0.509					2.000				
10-Jan-99	0.00	0.510					2.000				
11-Jan-99	0.33	0.653					2.000				
12-Jan-99	0.03	0.560					2.000				
13-Jan-99	0.00	0.523	46.8	0.036	43.0	0.033	2.000	12.4	0.036	7.0	0.021
14-Jan-99	0.52	0.578					2.000				
15-Jan-99	0.24	1.822					2.000				
16-Jan-99	0.65	2.075					2.000				
17-Jan-99	1.88	5.991					2.000				
18-Jan-99	1.12	3.607					2.000				
19-Jan-99	0.97	3.164					2.400				
20-Jan-99	0.68	4.258	7.5	0.047	20.0	0.125	2.400	6.9	0.024	16.0	0.056
21-Jan-99	0.79	2.899					4.000				
22-Jan-99	0.87	3.977					4.000				
23-Jan-99	0.00	1.838					4.000				
24-Jan-99	0.07	1.224					4.000				
25-Jan-99	0.00	0.981					4.000				
26-Jan-99	0.00	0.785					4.000				
27-Jan-99	0.03	1.402	43.2	0.089	70.0	0.144	4.000	6.6	0.039	16.0	0.094
28-Jan-99	1.54	3.494					4.000				
29-Jan-99	0.48	2.440					4.000				
30-Jan-99	0.70	2.481					4.000				
31-Jan-99	0.13	1.471					4.000				
Monthly Totals	11.09	51.380					84.800				
Monthly Avg.			31.6	0.049	40.8	0.081		7.8	0.029	13.3	0.053
Weekly Avg.			46.8	0.089	70.0	0.144		12.4	0.039	16.0	0.094

Jan '99 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	7.8	***30***	12.4	***45***	N/A	**N/A**
TSS (mg/l)	13.3	***50***	16.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	163.4	***500***	220	***750***	220	***1000***
TSS (lb/day)	301.1	***830***	534	***1200***	534	***1700***
BOD_5 Removal	75%	***85% Monthly Avg.***				
TSS Removal	67%	***65% Monthly Avg.***				

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Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	1999 Population =	5803
From April 1998 to April 1999	**Average =**	**5687**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Feb-99	0.00	1.258					4.000				
2-Feb-99	1.02	2.509					4.000				
3-Feb-99	0.05	1.866	39.0	0.107	85.0	0.233	4.000	7.4	0.043	26.2	0.154
4-Feb-99	0.55	2.332					4.000				
5-Feb-99	0.29	1.702					4.000				
6-Feb-99	1.33	3.331					4.000				
7-Feb-99	0.97	2.425					4.000				
8-Feb-99	0.37	1.871					4.000				
9-Feb-99	0.17	1.260					4.000				
10-Feb-99	0.40	1.077	58.0	0.092	87.0	0.137	4.000	9.5	0.056	21.6	0.127
11-Feb-99	0.00	0.869					3.886				
12-Feb-99	0.00	0.823					3.886				
13-Feb-99	0.61	0.879					3.886				
14-Feb-99	0.61	0.721					3.886				
15-Feb-99	0.00	0.736					3.527				
16-Feb-99	0.57	1.307					3.411				
17-Feb-99	0.51	1.568	25.4	0.058	69.0	0.159	3.411	10.2	0.051	19.5	0.098
18-Feb-99	1.56	3.380					3.411				
19-Feb-99	0.21	1.370					3.411				
20-Feb-99	0.06	1.260					3.411				
21-Feb-99	0.63	1.827					3.411				
22-Feb-99	1.58	4.120					3.296				
23-Feb-99	0.74	3.995					3.296				
24-Feb-99	1.82	2.209	28.7	0.093	26.0	0.084	3.296	11.7	0.057	26.0	0.126
25-Feb-99	0.47	1.882					3.296				
26-Feb-99	0.19	2.016					3.296				
27-Feb-99	1.50	4.230					3.296				
28-Feb-99	0.84	2.314					3.296				
Monthly Totals	17.05	55.137					102.609				
Monthly Avg.			37.8	0.087	66.8	0.153		9.7	0.052	23.3	0.126
Weekly Avg.			58.0	0.107	87.0	0.233		11.7	0.057	26.2	0.154

Feb '99 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	9.7	***30***	11.7	***45***	N/A	**N/A**
TSS (mg/l)	23.3	***50***	26.2	***80***	N/A	**N/A**
BOD_5 (lb/day)	293.9	***500***	322	***750***	322	***1000***
TSS (lb/day)	716.0	***830***	874	***1200***	874	***1700***
BOD_5 Removal	74%	***85% Monthly Avg.***				
TSS Removal	65%	***65% Monthly Avg.***				

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	1998 Population =	5571
Summary of WWTP Effluent Preformance versus NPDES Permit Limitations	1999 Population =	5803
From April 1998 to April 1999	**Average =**	**5687**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Mar-99	0.38	1.704					3.296				
2-Mar-99	0.02	1.640					3.296				
3-Mar-99	0.86	2.495	65.0	0.238	94.0	0.344	3.296	11.9	0.058	36.0	0.174
4-Mar-99	0.31	1.769					3.296				
5-Mar-99	0.04	1.148					3.296				
6-Mar-99	0.00	0.911					3.296				
7-Mar-99	0.00	0.816					2.000				
8-Mar-99	0.07	0.770					2.000				
9-Mar-99	0.03	0.661					2.000				
10-Mar-99	0.02	0.595	50.5	0.044	60.0	0.052	2.000	15.8	0.046	36.0	0.106
11-Mar-99	0.00	0.537					2.000				
12-Mar-99	0.31	0.820					2.000				
13-Mar-99	0.26	1.124					2.000				
14-Mar-99	0.26	1.144					2.000				
15-Mar-99	0.00	0.787					2.000				
16-Mar-99	0.00	0.648					2.000				
17-Mar-99	0.00	0.617	74.4	0.067	100.0	0.090	2.000	15.5	0.045	57.0	0.167
18-Mar-99	0.11	0.602					1.141				
19-Mar-99	0.00	0.520					1.141				
20-Mar-99	0.05	0.517					1.141				
21-Mar-99	0.05	0.594					1.141				
22-Mar-99	0.03	0.528					1.141				
23-Mar-99	0.07	0.698					1.141				
24-Mar-99	0.47	1.004	42.9	0.063	31.0	0.046	0.912	19.4	0.026	71.0	0.095
25-Mar-99	0.09	0.729					0.912				
26-Mar-99	0.19	0.623					0.912				
27-Mar-99	0.27	0.635					0.912				
28-Mar-99	0.65	1.530					0.912				
29-Mar-99	0.71	1.744					0.912				
30-Mar-99	0.19	1.559					0.986				
31-Mar-99	0.33	1.199					0.986				
Monthly Totals	5.77	30.668					56.066				
Monthly Avg.			58.2	0.103	71.3	0.133		15.7	0.044	50.0	0.135
Weekly Avg.			74.4	0.238	100.0	0.344		19.4	0.058	71.0	0.174

March '99 Effluent Summary

	Monthly Avg.	*NPDES Limit*	Weekly Avg.	*NPDES Limit*	Daily Max.	*NPDES Limit*
BOD_5 (mg/l)	15.7	***30***	19.4	***45***	N/A	**N/A**
TSS (mg/l)	50.0	***50***	71.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	249.2	***500***	327	***750***	327	***1000***
TSS (lb/day)	770.2	***830***	990	***1200***	990	***1700***
BOD_5 Removal	73%	***85% Monthly Avg.***				
TSS Removal	30%	***65% Monthly Avg.***				

CITY OF INDEPENDENCE, OREGON
SANITARY SEWER PRELIMINARY DESIGN REPORT
J.O. INDP0008

Summary of WWTP Effluent Preformance versus NPDES Permit Limitations
From April 1998 to April 1999

1998 Population =	5571
1999 Population =	5803
Average =	**5687**

DAY MONTH YEAR	PRECIP. (IN)	TOTAL INFLUENT (MG)	INFLUENT BOD_5 (MG/L)	INFLUENT BOD_5 (LBS/CAPITA)	INFLUENT TSS (MG/L)	INFLUENT TSS (LBS/CAPITA)	TOTAL EFFLUENT (MG)	EFFLUENT BOD_5 (MG/L)	EFFLUENT BOD_5 (LBS/CAPITA)	EFFLUENT TSS (MG/L)	EFFLUENT TSS (LBS/CAPITA)
1-Apr-99	0.00	0.844	54.9	0.068	97.8	0.121	0.986	18.3	0.026	55.0	0.080
2-Apr-99	0.12	0.701					0.986				
3-Apr-99	0.12	0.722					0.986				
4-Apr-99	0.12	0.666					0.986				
5-Apr-99	0.00	0.623					0.839				
6-Apr-99	0.00	0.523					0.839				
7-Apr-99	0.00	0.536	32.7	0.026	14.0	0.011	0.839	18.9	0.023	40.2	0.049
8-Apr-99	0.03	0.477					0.839				
9-Apr-99	0.06	0.538					0.839				
10-Apr-99	0.81	0.703					0.839				
11-Apr-99	0.00	0.538					0.839				
12-Apr-99	0.00	0.475					0.839				
13-Apr-99	0.00	0.438					0.839				
14-Apr-99	0.00	0.429	72.9	0.046	66.7	0.042	0.839	14.6	0.018	32.1	0.039
15-Apr-99	0.00	0.422					1.741				
16-Apr-99	0.00	0.406					1.741				
17-Apr-99	0.00	0.416					1.741				
18-Apr-99	0.01	0.433					1.741				
19-Apr-99	0.04	0.405					1.561				
20-Apr-99	0.00	0.452					1.561				
21-Apr-99	0.00	0.448	98.5	0.065	84.1	0.055	1.561	11.2	0.026	31.0	0.071
22-Apr-99	0.00	0.408					0.986				
23-Apr-99	0.00	0.377					1.141				
24-Apr-99	0.00	0.394					1.141				
25-Apr-99	0.03	0.421					1.141				
26-Apr-99	0.00	0.383					1.141				
27-Apr-99	0.22	0.407					1.561				
28-Apr-99	0.02	0.379	14.0	0.008	130.1	0.072	1.561	12.7	0.029	26.6	0.061
29-Apr-99	0.00	0.387					1.561				
30-Apr-99	0.00	0.371					1.561				
Monthly Totals	1.58	14.722					35.775				
Monthly Avg.			54.6	0.042	78.5	0.060		15.1	0.024	37.0	0.060
Weekly Avg.			98.5	0.068	130.1	0.121		18.9	0.029	55.0	0.080

Ap '99 Effluent Summary	Monthly Avg.	***NPDES Limit***	Weekly Avg.	***NPDES Limit***	Daily Max.	***NPDES Limit***
BOD_5 (mg/l)	15.1	***30***	18.9	***45***	N/A	**N/A**
TSS (mg/l)	37.0	***50***	55.0	***80***	N/A	**N/A**
BOD_5 (lb/day)	139.2	***500***	165	***750***	165	***1000***
TSS (lb/day)	341.6	***830***	452	***1200***	452	***1700***
BOD_5 Removal	72%	***85% Monthly Avg.***				
TSS Removal	53%	***65% Monthly Avg.***				

APPENDIX F

Existing and Projected Basin Flow Analysis

Existing Basin Flow

Design Criteria	Existing Criteria
Number of Dwelling Units (DU) Per RS Acre	5
Number of Dwelling Unit per RM Acre	6
Number of Dwelling Unit per RH Acre	16
Number of Dwelling Unit per RSA Acre	2.5
Persons Per RS and RM Dwelling Unit	2.9
Persons per RH Dwelling Unit	2.5
Persons per RSA Dwelling Unit	2.0
Commercial Flow (gpapd)	1000
Industrial Flow (gpapd)	1000
Gallons per Capita per Day (gpcpd)	75
Infiltration and Inflow (I/I) (gpad)	1000
Peaking Factor	3.0

Existing Basin Flows

Basin	Influent Pump Station	Sub-basins	Total Area (ac)	Total Developed (ac)	ow	Industrial Flow (IL/IH)		Flow from I/I	Total Existing Basin Flow	Total Existing Peak Flow
					d)	(ac)	(gpd)	(gpd)	(gpd)	(gpm)
A	Oak St.	A	223.5	223.5	00	100.5	100,500	223,500	397,379	517
B	Rvrview	B1	98.1	98.1	00	0.0	0	98,100	183,270	246
		B2A	115.6	115.6	00	9.9	9,900	115,600	195,324	246
		B2B	106.7	106.7	00	4.7	4,700	106,700	178,698	224
		Basin Total	*320.4*	*320.4*	*00*	*14.6*	*14,600*	*320,400*	*557,291*	*716*
C	9th St.	C1	206.0	169.1	00	8.5	8,500	169,100	373,386	543
		C2	81.5	28.2		0.0	0	28,200	48,863	63
		Basin Total	*287.5*	*197.3*	*00*	*8.5*	*8,500*	*197,300*	*422,249*	*606*
D	Lagoon	D1	118.4	104.8	00	0.0	0	104,800	207,873	288
		D2	136.7	108.7		0.0	0	108,700	208,011	282
		Basin Total	*255.1*	*213.5*	*00*	*0.0*	*0*	*213,500*	*415,883*	*570*
E	Williams	E	225.6	129.4		24.4	24,400	129,400	178,550	192

Ultimate Basin Flow

Design Criteria	Future Criteria
Number of Dwelling Units (DU) Per RS Acre	6
Number of Dwelling Unit per RM Acre	6
Number of Dwelling Unit per RH Acre	20
Number of Dwelling Unit per RSA Acre	2.5
Persons Per RS and RM Dwelling Unit	2.9
Persons per RH Dwelling Unit	2.5
Persons per RSA Dwelling Unit	2.0
Commercial Flow (gpapd)	1000
Industrial Flow (gpapd)	1000
Gallons per Capita per Day (gpcpd)	75
Infiltration and Inflow (I/I) (gpad)	1000
Peaking Factor	3.0

Existing Basin Flows

Basin	Influent Pump Station	Sub-basins	Total Area (ac)	UnDeveloped Area (ac)	Unde A	lential (RH) Existing Flow (gpd)	Total Basin Flow (gpd)
A	Oak St.	A	238.6	15.1		9,000	9,000
B	Riverview	B1	98.1	0.0		14,100	14,100
		B2A	115.6	0.0		0	0
		B2B	62.3	0.0		0	0
		Basin Total	*276*	*0.0*		*23,100*	*14,100*
C	9th St.	C1	212.8	42.2		79,500	121,125
		C2	287.2	161.6		0	0
		Basin Total	*500.0*	*203.8*		*79,500*	*121,125*
D	Lagoon	D1	118.4	13.6		73,200	124,200
		D2	188.2	75.0		0	0
		Basin Total	*306.6*	*88.6*		*73,200*	*124,200*
E	Williams	E1	235.4	110.5		0	0

Existing Basin Flows

Basin	Influent Pump Station	Sub-basins	Total Area (ac)	UnDeveloped Area (ac)	Unde A	Flow from I/I (gpd)	Total Ultimate Flow (gpd)	Total Ultimate Peak Flow (gpm)
A	Oak St.	A	238.6	15.1		238,600	427,579	559
B	Riverview	B1	98.1	0.0		98,100	183,270	246
		B2A	115.6	0.0		115,600	195,324	246
		B2B	62.3	0.0		62,300	86,883	94
		Basin Total	*276*	*0.0*		*276,000*	*465,476*	*586*
C	9th St.	C1	212.8	42.2		212,800	496,003	738
		C2	287.2	161.6		287,200	566,166	781
		Basin Total	*500.0*	*203.8*		*500,000*	*1,062,168*	*1,518*
D	Lagoon	D1	118.4	13.6		118,400	272,473	403
		D2	188.2	75.0		188,200	385,386	541
		Basin Total	*306.6*	*88.6*		*306,600*	*657,858*	*945*
E	Williams	E1	235.4	110.5		235,400	395,841	498

APPENDIX G

Monmouth / Independence Joint Effluent Reclaimation Project, Feasibility Report Draft, September, 2004

MONMOUTH/INDEPENDENCE JOINT EFFLUENT RECLAMATION PROJECT

DRAFT FEASIBILITY STUDY

September 2004

WHITAKER ENGINEERING INC.

Monmouth-Independence Joint Effluent Reuse Project Feasibility Study

I. INTRODUCTION

A. Purpose and Scope – The purpose of this report is to determine the long-term (20-year) feasibility of a joint effluent reuse project between the Cities of Independence and Monmouth that would combine and transfer treated effluent from two wastewater treatment facilities to area farmland for beneficial reuse. In addition, this report will provide recommendations for facility improvements to provide reliable operation for a 20-year period. Project feasibility will be determined based on the following parameters:

- projected wastewater flows and characteristics,
- capacity of affected facilities at the Monmouth WWTP,
- irrigation site availability, and
- crop irrigation requirements.

B. Summary of Findings

1. Effluent Suitability

The Independence effluent is very similar to that of the City of Monmouth and no adverse effects from combining these two waters is expected.

2. Impact on Existing Facilities

Addition of Independence effluent will require modification to existing facilities to accommodate the increased loading.

3. Impact on Reuse Site Availability

Site #1 currently does not have adequate capacity to satisfy the surplus effluent generated by both communities through 2021. However, two additional sites (Sites 2 & 3) that are currently under DEQ review plus a fourth site will provide more land than needed to utilize projected effluent quantities. Final permitting of Sites 2 & 3 is expected during 2004 and Site 4 is expected to obtain approval during 2005.

4. Financial Impacts

Initial capital investment by the City of Independence will include the following:

- $210,000 for capacity improvements to the Monmouth facilities,
- $510,000 for a transfer pump station and pipeline to the Monmouth WWTP, and
- Compensation to landowner for contracting to irrigate required effluent amounts (estimated at $200,000).

Table 2 – Unit Process Capacity

Unit Process	Parameter	Capacity
Monmouth Pond #3		
	HDT, days	28
	BOD5, #/d	460
CCB (9 ft deep, 60 min HRT)	Flow, mgd	1.8
CCB (9 ft deep, 20 min HRT)	Flow, mgd	5.4
Irrigation Pump	Flow, gpm	1,350
Automatic Strainer	Flow, gpm	1,700
Pipeline	Flow, gpm	2,900
Booster Station #1	Flow, gpm	1,200
Operating Capacity	Flow, gpm	1,085

C. Operating Capacity – The instantaneous flow capacity of the existing reclaimed effluent facilities is limited by capacity at the Irrigation Pump Station. As shown in Table 1, the irrigation pump has a capacity of 1,350 gpm. However, the strainer uses approximately 150 gpm during backwash, leaving about 1,200 gpm of sustained flow available to Site #1. Also, each irrigation zone requires a higher flow rate for several minutes each time it starts in order to fill the submains and laterals and bring the zone up to pressure. The initial fill rate is limited to 1,200 gpm by the irrigation pump capacity. Experience has shown that a sustained flow of 1,085 gpm is the upper limit that can be supplied without exceeding the irrigation pump capacity during this initial fill cycle.

D. Existing Reuse Site(s) – To date, one reuse site has been permitted for beneficial reuse of Monmouth WWTP effluent. This property is located on the west side of Helmick Road approximately 2 miles south of Monmouth and consists of one tax lot totaling 291 gross acres. The site is currently planted in hybrid poplars (57 acres), ponderosa pine (11 acres), black walnut (49 acres), annual ryegrass (69 acres), and perennial fescue (68 acres). Only the tree plantations are currently under irrigation. This site, when fully developed as a tree plantation, will utilize up to 120 Mgal per year. While this will satisfy Monmouth's need for beneficial use, it will not provide adequate demand to utilize surplus effluent from both communities.

Two additional site reuse plans are under review by DEQ and one additional site reuse plan is expected to be submitted to DEQ during 2004. These sites will be discussed further in the following sections.

III. FUTURE CONDITIONS

A. Projected Flows – Table 3 provides estimated surplus wastewater quantities for Monmouth, Independence, and the two cities combined through 2021. These tables provide projections for surplus quantities for three scenarios:

- Design Case #1 – This scenario assumes that population will grow at an annual rate 0.5% higher than current projections and precipitation/evaporation will be

miles south of Monmouth and is transected by the existing 16-inch reclaimed effluent transmission pipeline. The estimated potential capacity of this site is between 35 and 85 Mgal, depending on crop selection.

3. Site 3 – This 300-acre site is currently under review by the Department of Environmental Quality. It is located east of Site 2 approximately 1.75 miles south of Monmouth and is transected by the existing 16-inch reclaimed effluent transmission pipeline. The estimated potential capacity of this site is between 69 and 166 Mgal, depending on crop selection.

4. Site 4 – This 152-acre site is currently in the permitting stage and is expected to be submitted to the Department of Environmental Quality this year. It is located north of Site 3 approximately 0.7 miles south of Monmouth and is transected by the existing 16-inch reclaimed effluent transmission pipeline. The estimated potential capacity of this site is between 35 and 84 Mgal, depending on crop selection.

B. Water Budget Analysis

Based on the water budget analyses presented in Appendix B for the three design cases discussed in Section III above, the following conclusions can be made:

1. Assuming Sites 2, 3, and 4 are permitted, a total of 830 acres will be available for beneficial reuse. This is adequate to produce a demand for anticipated surplus effluent. At 2021 maximum surplus effluent production rates of 206 Mgal, the average irrigation application on all four sites would be approximately 9 inches.

2. Under projected average conditions (Design Case #2), the existing contracted acreage at Site #1, while adequate for Monmouth, is not adequate to utilize the projected volume of surplus effluent from both communities. Approximately 200 additional acres will need to be contracted, depending on the type of crops anticipated.

3. If reuse site acreage is contracted to accommodate Design Case #2, then an under-supply of effluent may exist during a dry year. This can be mitigated with on-site storage facilities at one or more irrigation sites. The estimated size of storage reservoir required to supply crops with optimum water during a dry year is 100 Mgal (300 ac-ft).

Sites 2, 3, and 4, if permitted, will add an additional 600 acres of land under production with reclaimed effluent. Irrigation demand from this land will exceed the supply of reclaimed wastewater from both communities through 2021. However, cropping choices may require additional storage.

Market conditions will influence future cropping choices. The City of Monmouth Effluent Reuse Plan includes water/nutrient uptake information for several selected crops that are currently being grown or have a good potential for selection in the future. Water uptake rates range from 19 inches per year for grass seed crops to 37 inches per year for mature poplar. With average June-October precipitation totaling 7 inches, the remaining plant needs range from 12 inches to 30 inches. A conservative design provides 80% of the consumptive needs of the crop through irrigation, forcing the plants to take the remaining 20% from the soil. This

criteria or restricting the location of the first point of use of reclaimed water (i.e. branch flow to WOU campus as STA 7+00).

2. The existing facilities will not accommodate Monmouth or combined flows through 2021.

3. Modest facility improvements to existing facilities will accommodate projected flows from Monmouth through 2021 without restricting the location of the first point of use of reclaimed water. Improvements required for this scenario would likely include the following:

   - New motor, impellers, and stage for existing effluent irrigation pump, and
   - New pump and filter at Booster Station #1.
   - Control system modifications

4. Major improvements to the capacity of the existing facilities will accommodate all future flows from Monmouth and additional flow from Independence through 2021. The required physical improvements would likely include the following:

   - Addition of second effluent irrigation pump and modification of existing pump/motor,
   - Addition of new automatic strainer and control panel,
   - Structural improvements to existing suspended pre-cast slabs,
   - Addition of third pump and filter at Booster Station #1 and/or addition of irrigation facilities at Sites 2, 3, and/or 4.
   - Control system modifications.

Addition of Independence effluent to the Monmouth WWTP will increase flow and decrease chlorine contact time. Since Monmouth uses a portion of the transmission pipeline to satisfy the chlorine contact time, the addition of Independence effluent may increase the length of pipe required to obtain the target contact time. This may have the effect of "passing by" potential reuse sites that could be developed within the City limits of Monmouth to decrease the summer demand for potable water. This disadvantage can be overcome by either an expanded Monmouth chlorine contact basin or by transferring chlorinated water from Independence WWTP directly into the Monmouth CCB.

V. PROPOSED FACILITY IMPROVEMENTS

Regardless of whether Independence effluent is transferred to the Monmouth WWTP, some improvements to the existing effluent reclamation facilities will eventually be required. However, addition of the Independence effluent will require immediate construction of more extensive facilities. Without the Independence effluent, it is expected that the existing Monmouth effluent reclamation facilities will

Design Point	Flow (gpm)	TDH (ft)
#1	1500	230
#2	1300	230
#3	330	230

The total discharge head required will depend on the pressure required at the anticipated point(s) of use. The final design criteria should be coordinated with anticipated irrigation needs to minimize the need for booster pumping at remote irrigation sites.

b) Effluent Strainer – No improvements required.

c) Structural Improvements – No improvements required.

3. Transmission Pipeline – No improvements are required.

4. Booster Station #1 – A third pump and filter may be required at Booster Station #1 to accommodate anticipated peak flows, depending on the water use of additional irrigation sites.

5. Irrigation Site Acreage – The existing Site #1 acreage will accommodate the needs of the City of Monmouth.

Improvements required for combined Monmouth/Independence effluent – The following improvements to the Monmouth Effluent Reuse Facilities will be required if addition of Independence effluent occurs:

1. Disinfection System – The following improvements to the existing disinfection system will be required

   a) Chlorine contact basin Improvements – No improvements required unless there will be an anticipated use of reclaimed effluent at pipeline stations less than 70+00.

   b) Chlorine feed system improvements – Chlorine feed capacity will need to be increased at peak flow for chlorine dosage rates in excess of 17 mg/l.

2. Effluent Irrigation Pump Station – The following improvements to the existing pump station will be required:

   a) A second pump and adjustable speed drive will be required to increase the total pump station capacity to 3,000 gpm at 230 ft TDH. The actual total dynamic head required will depend on the pressure required at the anticipated point(s) of use. The final design criteria should be coordinated with anticipated irrigation needs to minimize the need for booster pumping at remote irrigation sites.

   b) Effluent Strainer – A second effluent strainer and control panel similar to the existing strainer and control panel will be required.

Appendix A

Wastewater Characteristics

Table A-1
Monmouth Wastewater Composition

Analyte	Reporting Limit	Units[1]	Concentration[2]
Disinfection Byproducts			
Chloroacetic acid	1.3	µg/l	1.3
Bromoacetic acid	0.7	µg/l	0.7
Dichloroacetic acid	0.7	µg/l	5.5
Trichloroacetic acid	0.7	µg/l	2.1
Bromochloroacetic acid	0.7	µg/l	0.7
Dibromoacetic acid	0.7	µg/l	0.7
Chloroform	0.5	µg/l	1.7
Bromodichloromethane	0.5	µg/l	0.5
Dibromochloromethane	0.5	µg/l	0.5
Bromoform	0.5	µg/l	0.5
Total Organic Halides	50	µg/l	76.2

Notes:
[1]mg/l = ppm, µg/l = ppb
[2]If analyte was below detection limits, the concentration was assumed to be equal to the detection limit.

Table A-2
Independence Wastewater Composition

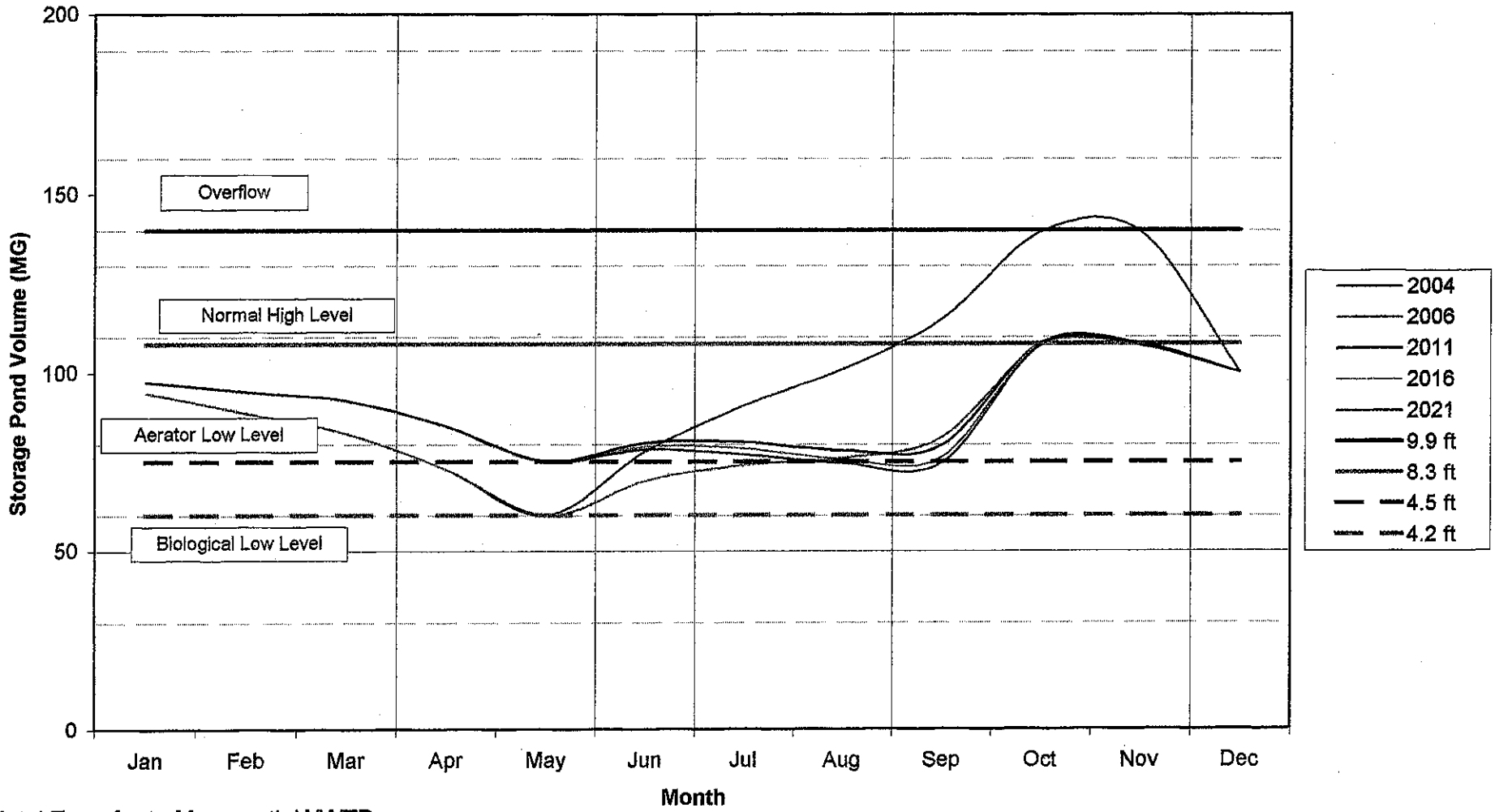
Analyte	Reporting Limit	Units[1]	Concentration[2]
Disinfection Byproducts			
Chloroacetic acid		µg/l	1.9
Bromoacetic acid	1.0	µg/l	1[U]
Dichloroacetic acid		µg/l	8.3
Trichloroacetic acid		µg/l	2.9
Bromochloroacetic acid	1.0	µg/l	1[U]
Dibromoacetic acid	1.0	µg/l	1[U]
Chloroform		µg/l	5.0
Bromodichloromethane	0.5	µg/l	0.5[U]
Dibromochloromethane	0.5	µg/l	0.5[U]
Bromoform	0.5	µg/l	0.5[U]
HAA5	1.0	MCL	60

Notes:
[1]mg/l = ppm, µg/l = ppb
[2]If analyte was below detection limits, the concentration was assumed to be equal to the detection limit.

Design Case #1

This design case assumes that both communities will grow at a rate approximately 0.5% higher than projected, precipitation will be at a ten year high, and evaporation will be 94% of average (corresponding with 10-yr precipitation).

The crop acreage required by this design case is not the actual amount that must be planted and irrigated on a given year. Instead, it is the amount that must be available to be planted and irrigated (i.e. approved Site Reuse Plan) with reasonable advance notice (1-2 yrs). By revising the population projections (and subsequently the crop acreage requirements) on a 5-year interval, the crop acreages for this design case do not have to be developed until actual census information reflects growth higher than normal.



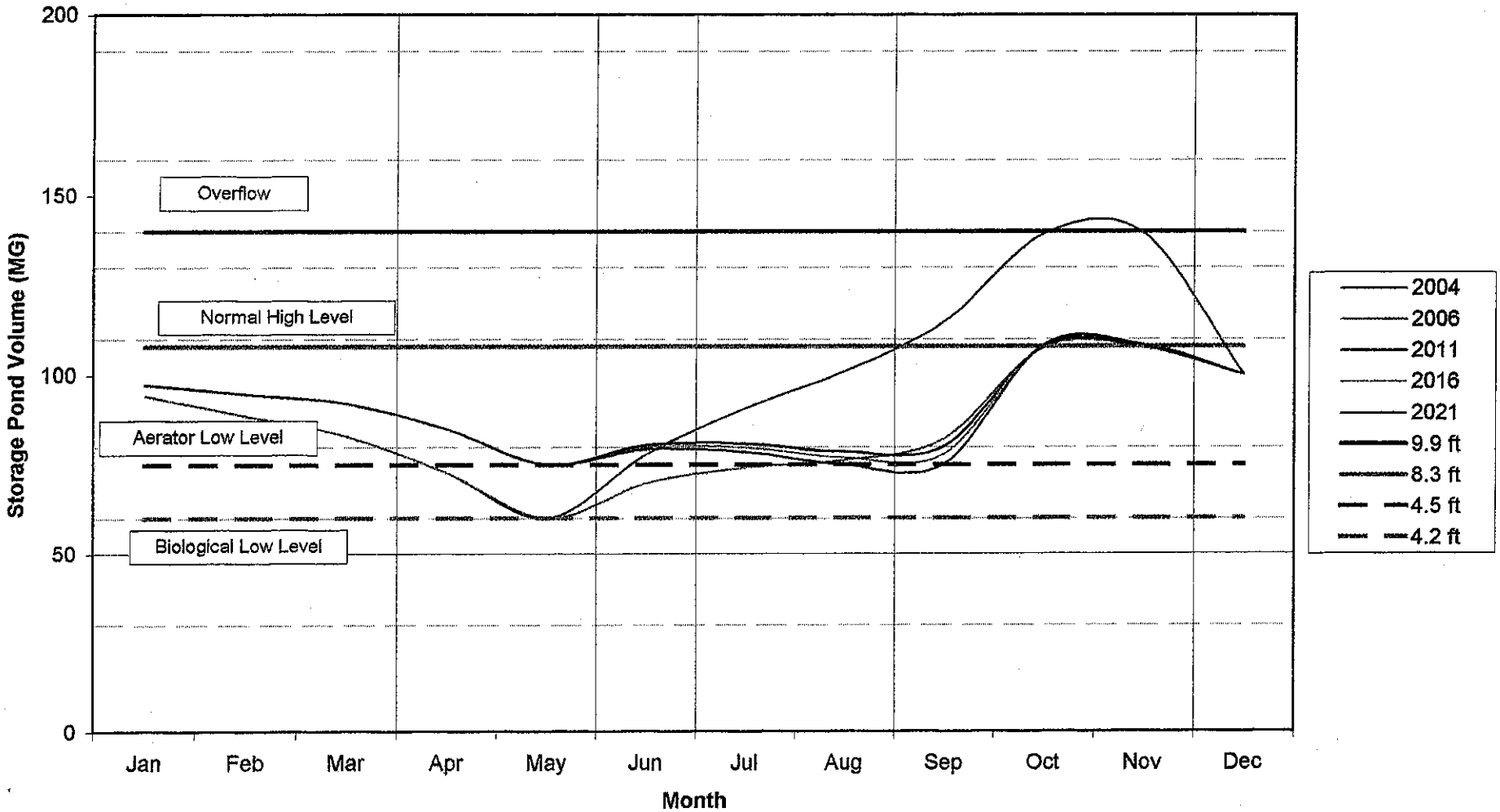
Total Transfer to Monmouth WWTP:
2004: 0 MG
2006: 37 MG
2011: 50 MG
2016: 83 MG
2021: 103 MG

Figure B-2
Independence WWTP
Storage Pond Water Balance
Design Case #1

Design Case #2

This design case assumes that both communities will grow at a rates that are similar to recent growth trends, precipitation will be at a ten year high, and evaporation will be 94% of average (corresponding with 10-yr precipitation).

The crop acreage required by this design case is the crop acreage that must be planted and available to receive irrigation on any given year. Because predicting a "wet season" is difficult, the City and landowner must always approach the irrigation season with the assumption that it will be a wet year (precipitation at a ten year high). In doing so, the City should be protected from overflow or early discharge during a wet season with a 10% chance of recurrence.



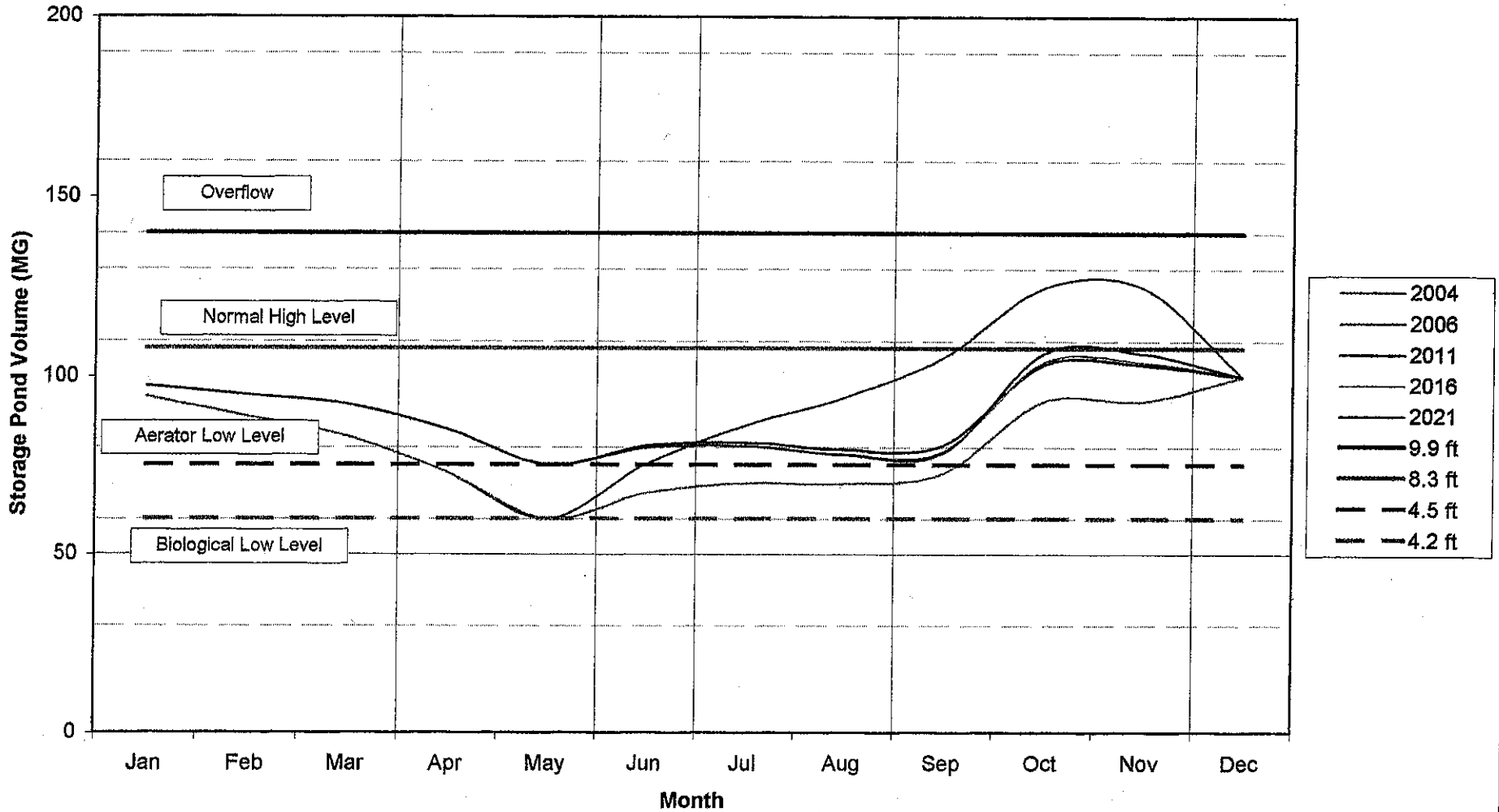
Total Transfer to Monmouth WWTP:
2004: 0 MG
2006: 36 MG
2011: 62 MG
2016: 75 MG
2021: 89 MG

Figure B-5
Independence WWTP
Storage Pond Water Balance
Design Case #2

Design Case #3

This design case assumes that both communities will grow at a rates that are similar to recent growth trends, precipitation will be at a ten year low, and evaporation will be 107% of average (corresponding with 10-yr low precipitation). The pond volume at the end of May must correspond with that in Design Case #2.

The crop acreages shown in this design case are the same as those shown in Design Case #2. The amount of irrigation has been reduced to maintain the minimum volume in the lagoons. The purpose of this design case is to quantify the crop water deficit that would exist on a year when precipitation was at a 10-year low. This information allows the landowner to determine if on-site storage is required to ensure crop productivity on a dry year.



Total Transfer to Monmouth WWTP:
2004: 0 MG
2006: 21 MG
2011: 47 MG
2016: 60 MG
2021: 74 MG

Figure B-8
Independence WWTP
Storage Pond Water Balance
Design Case #3

City of Independence
WWTP Lagoon Physical Characteristics

Lagoon No.	Bottom El ft	Top of Dike ft	Min FBD ft	Min Depth ft	HGL_{max} ft	HGL_{min} ft	A_{avg} ac	V_{ovrflo} Mgal	V_{max} Mgal	V_{min} Mgal	Available Storage Mgal
1	164.5	174.5	2.0	4.0	172.5	168.5	11.1	36.2	28.9	14.5	14.5
2	171.5	178.3	2.0	4.0	176.3	175.5	9.2	20.3	14.3	11.9	2.4
3	165.5	172.5	2.0	4.0	170.5	169.5	14.2	32.4	23.1	18.5	4.6
4	160.5	171.0	2.0	3.0	169.0	163.5	15.1	51.7	41.8	14.8	27.1
						Total =	49.6	140.5	108.2	59.7	48.5

Min FBD = minimum freeboard, typically 2 ft.
Min Depth = minimum depth, DEQ recommends minimum of 3.5 ft.
HGL_{max} = maximum level in pond.
HGL_{min} = minimum level in pond.
A_{avg} = Average area of pond (at average level).[1]
V_{ovrflo} = Volume of pond at overflow condition.
V_{max} = Volume of pond at maximum level.[1]
V_{min} = Volume of pond at minimum level.[1]

[1] ASCG, *City of Independence Sewage Facilities Plan Update*, 1994, Appendix G

Case #1 - No Improvements, Contact Time in Monmouth CCB Alone

Start Date:	15-May		
End Date:	1-Oct		
Irrig. Season Length	139	days	
Monmouth CCB Volume:	74,530	gallons w/CCB at 9 ft depth	
Consider Monmouth Pipeline to STA:			
Monmouth Pipe Diameter:	16	inches	
Pipeline Volume:	0	gallons	
Independence CCB Volume:		gallons	
Consider Independence Pipeline to STA:			
Independence Pipe Diameter:	10	inches	
Pipeline Volume:	0	gallons	
Total Volume:	74,530		
Contact Time @ Avg Condition:	60	min	
Contact Time @ Peak Condition:	20	min	
Capacity for 60 min contact time (avg cond.):	1,242	gpm	
Capacity for 20 min contact time (peak cond.):	3,727	gpm	
Irrigation Pump Capacity:	1,350	gpm	EXISTING
Backwash Rate:	150	gpm	EXISTING
Net Irrigation Pump Capacity:	1,200	gpm	
Reduction for Sustained Flow:	10%		
Effective Irrigation Pump Capacity	1,085		
Strainer Capacity:	1,700		EXISTING
Pipeline Capacity:	2,950	gpm	EXISTING
Irrigation Site Capacity:	1,200	gpm	EXISTING
Max Irrigation Flow at Dry/Avg Conditions:	**1,085**	**gpm**	
Max Irrigation Flow at Peak Conditions:	**1,085**	**gpm**	

	2004			2021		
Condition	Dry	Avg	Peak	Dry	Avg	Peak
Max Flow Rate, gpm	1,085	1,085	1,085	1,085	1,085	1,085
Design Irrigation Days/Week	5	5	5	5	5	7
Min/Req'd Irrig Hrs/d						
Monmouth Only	5	7	7	12	14	11
Combined	9	14	14	23	28	23

Conclusions:
The existing facilities are adequate for current flows from Monmouth but will not accommodate future flows from Monmouth or combined flows from Monmouth/Independence without requiring an irrigation schedule that exceeds established criteria.

Case #2 - With Improvements, Contact Time in Monmouth CCB and Pipe to STA 7+00

Start Date:	15-May		
End Date:	1-Oct		
Irrig. Season Length	139	days	
Monmouth CCB Volume:	74,530	gallons w/CCB at 9 ft depth	
Consider Monmouth Pipeline to STA:	7+00		
Monmouth Pipe Diameter:	16	inches	
Pipeline Volume:	7,311	gallons	
Independence CCB Volume:		gallons	
Consider Independence Pipeline to STA:			
Independence Pipe Diameter:	10	inches	
Pipeline Volume:	0	gallons	
Total Volume:	81,841		
Contact Time @ Avg Condition:	60	min	
Contact Time @ Peak Condition:	20	min	
Capacity for 60 min contact time (avg cond.):	1,364	gpm	
Capacity for 20 min contact time (peak cond.):	4,092	gpm	
Irrigation Pump Capacity:	1,500	gpm	IMPROVED
Backwash Rate:	150	gpm	EXISTING
Net Irrigation Pump Capacity:	1,350	gpm	
Reduction for Sustained Flow:	10%		
Effective Irrigation Pump Capacity	1,221		
Strainer Capacity:	1,700		EXISTING
Pipeline Capacity:	2,950	gpm	EXISTING
Irrigation Site Capacity:	1,350	gpm	IMPROVED
Max Irrigation Flow at Dry/Avg Conditions:	**1,214**	**gpm**	
Max Irrigation Flow at Peak Conditions:	**1,221**	**gpm**	

	2004			2021		
Condition	Dry	Avg	Peak	Dry	Avg	Peak
Max Flow Rate, gpm	1,214	1,214	1,221	1,214	1,214	1,221
Design Irrigation Days/Week	5	5	5	5	5	7
Min/Req'd Irrig Hrs/d						
Monmouth Only	4	6	6	10	12	10
Combined	8	13	12	21	25	20

Conclusions:
Improved facilities are adequate for current and future flows from Monmouth if contact time is considered out to the indicated pipe station in the transmission line. However, the improvements and additional contact time will not accommodate future combined flows from Monmouth/Independence without requiring an irrigation schedule that exceeds established criteria.

Case #4 - With Improvements, Contact Time in CCB and Pipe to STA 90+00

Start Date:	15-May		
End Date:	1-Oct		
Irrig. Season Length	139	days	
Monmouth CCB Volume:	74,530	gallons w/CCB at 9 ft depth	
Consider Monmouth Pipeline to STA:	90+00		
Monmouth Pipe Diameter:	16	inches	
Pipeline Volume:	93,996	gallons	
Independence CCB Volume:		gallons	
Consider Independence Pipeline to STA:			
Independence Pipe Diameter:	10	inches	
Pipeline Volume:	0	gallons	
Total Volume:	168,526		
Contact Time @ Avg Condition:	60	min	
Contact Time @ Peak Condition:	20	min	
Capacity for 60 min contact time (avg cond.):	2,809	gpm	
Capacity for 20 min contact time (peak cond.):	8,426	gpm	
Irrigation Pump Capacity:	3,000	gpm	IMPROVED
Backwash Rate:	300	gpm	IMPROVED
Net Irrigation Pump Capacity:	2,700	gpm	
Reduction for Sustained Flow:	10%		
Effective Irrigation Pump Capacity	2,441		
Strainer Capacity:	3,400		IMPROVED
Pipeline Capacity:	2,950	gpm	EXISTING
Irrigation Site Capacity:	2,700	gpm	IMPROVED
Max Irrigation Flow at Dry/Avg Conditions:	**2,441**	**gpm**	
Max Irrigation Flow at Peak Conditions:	**2,441**	**gpm**	

	2004			2021		
Condition	Dry	Avg	Peak	Dry	Avg	Peak
Max Flow Rate, gpm	2,441	2,441	2,441	2,441	2,441	2,441
Design Irrigation Days/Week	5	5	5	5	5	7
Min/Req'd Irrig Hrs/d						
Monmouth Only	2	3	3	5	6	5
Combined	4	6	6	10	12	10

Conclusions:
Improved facilities are adequate for current and future combined flows from Monmouth and Independence if contact time is considered out to the indicated pipe station in the transmission line.

Table C-2 - Independence Effluent Transfer Pump Station System Calculations

Single Pump Operation

Total Flow = 750 gpm = 1.67 cfs

Description	Qty	Pipe Length	K(new)	Line Size	Flow	Velocity	Minor Losses	Leq @ Smooth C value	Total Length	Dynamic Losses C = 150
Suction Piping										
Entrance	1		0.78	10	750	3.1	0.114	40.7	40.7	0.11
Discharge Piping										
90 degree elbow	1		0.28	10	750	3.1	0.041	14.6	14.6	0.04
Pipe		15		10	750	3.1	0.000	0.0	15.0	0.04
90 degree elbow	1		0.28	10	750	3.1	0.041	14.6	14.6	0.04
Pipe		2		10	750	3.1	0.000	0.0	2.0	0.01
Swing Check Valve	1		1.4	10	750	3.1	0.204	73.0	73.0	0.20
Plug Valve	1		0.25	10	750	3.1	0.036	13.0	13.0	0.04
Through Flow Tee	1		0.28	10	750	3.1	0.041	14.6	14.6	0.04
Plug Valve	1		0.25	10	750	3.1	0.036	13.0	13.0	0.04
Pipe		8200		10	750	3.1	0.000	0.0	8200.0	22.91
Exit Loss	1		1	10	750	3.1	0.146	52.1	52.1	0.15

Suction Calculations

Wet Well Level =	160	Ha =	33.96
Pump Centerline El =	162	Hvpa =	0.783
Hst =	-2		

Discharge El = 180.00
Dischrg Pressure = 0 psig

Total Dynamic Loss =	23.62
Total Static Head =	20.0
Total Dynamic Head =	44
NPSHa =	31.1

Table D-1 - Economic Rate Analysis

Year	Cost	Ind. Qty	Indep. Rate	Ind. Income	Independence Services	Avg. Cost/Svc/Mo.	Comb. Qty	Demand	Add'l Ag Qty	Ag Rate	Ag. Income
2000	-$340,000			$0							$0
2001	-$2,852,000			$0							$0
2002	-$64,232			$0							$0
2003	-$22,625			$0							$0
2004	-$32,114			$0			61	61	0		$0
2005	-$30,250			$0			64	100	36	$200	$7,224
2006	-$44,256	50	$3,270	$163,824	2,800	$4.9	67	120	53	$200	$10,618
2007	-$46,332	52	$3,270	$170,213	2,877	$4.9	70	140	70	$200	$13,983
2008	-$48,516	54	$3,270	$176,852	2,956	$5.0	73	160	87	$200	$17,315
2009	-$50,815	56	$3,270	$183,749	3,037	$5.0	77	175	98	$200	$19,614
2010	-$53,234	58	$3,270	$190,915	3,120	$5.1	81	175	94	$200	$18,878
2011	-$55,782	61	$3,270	$198,361	3,205	$5.2	84	175	91	$250	$22,631
2012	-$58,164	63	$3,270	$206,097	3,293	$5.2	89	175	86	$250	$21,615
2013	-$60,673	65	$3,270	$214,135	3,383	$5.3	93	175	82	$250	$20,547
2014	-$63,302	68	$3,270	$222,486	3,476	$5.3	97	175	78	$250	$19,426
2015	-$66,057	71	$3,270	$231,163	3,571	$5.4	102	175	73	$250	$18,246
2016	-$68,946	73	$3,270	$240,178	3,669	$5.5	107	175	68	$300	$20,408
2017	-$71,976	76	$3,270	$249,545	3,770	$5.5	112	175	63	$300	$18,845
2018	-$75,154	79	$3,270	$259,277	3,873	$5.6	118	175	57	$300	$17,201
2019	-$78,488	82	$3,270	$269,389	3,979	$5.6	123	175	52	$300	$15,472
2020	-$81,987	86	$3,270	$279,895	4,088	$5.7	129	175	46	$300	$13,654
2021	-$85,659	89	$3,270	$290,811	4,200	$5.8	129	175	46	$300	$13,654

Discount Rate	7%	
2000 PW Costs =	-$3,530,000	
2000 PW Indep. Income =	$1,410,000	
2000 PW Ag. Income =	$0	Assume zero, unproven source of income

2000 PW Ag. Income = $120,000

		Share
Monmouth Net Prsnt Value (Cost) =	-$2,120,000	52%
Indep. Total 2000 PW Cost =	-$1,960,000	48%

Table D-3 - Estimated Annual Costs to City of Monmouth Associated with Hydraulic Capacity Related Improvements of the Effluent Reclamation Facilities as a Result of Combined Growth of Independence and Monmouth

	Monmouth Costs - Combined Effluent					
	Power	Labor	Engr	Capital	Total	
2000	$0	$40,000	$300,000		$340,000	Permitting & Design
2001	$2,000	$50,000	$300,000	$2,500,000	$2,852,000	Ph I Design & Const.
2002	$3,000	$11,232	$50,000		$64,232	O&M and Engr. Support
2003	$4,000	$11,625	$7,000		$22,625	O&M and Engr. Support
2004	$10,082	$12,032	$10,000		$32,114	O&M and Engr. Support
2005	$10,797	$12,453	$7,000		$30,250	O&M and Engr. Support
2006	$11,564	$25,342	$7,350		$44,256	O&M and Engr. Support
2007	$12,385	$26,229	$7,718		$46,332	O&M and Engr. Support
2008	$13,266	$27,147	$8,103		$48,516	O&M and Engr. Support
2009	$14,209	$28,097	$8,509		$50,815	O&M and Engr. Support
2010	$15,220	$29,081	$8,934		$53,234	O&M and Engr. Support
2011	$16,303	$30,098	$9,381		$55,782	O&M and Engr. Support
2012	$17,162	$31,152	$9,850		$58,164	O&M and Engr. Support
2013	$18,088	$32,242	$10,342		$60,673	O&M and Engr. Support
2014	$19,072	$33,371	$10,859		$63,302	O&M and Engr. Support
2015	$20,116	$34,539	$11,402		$66,057	O&M and Engr. Support
2016	$21,226	$35,748	$11,972		$68,946	O&M and Engr. Support
2017	$22,406	$36,999	$12,571		$71,976	O&M and Engr. Support
2018	$23,660	$38,294	$13,200		$75,154	O&M and Engr. Support
2019	$24,994	$39,634	$13,860		$78,488	O&M and Engr. Support
2020	$26,413	$41,021	$14,552		$81,987	O&M and Engr. Support
2021	$27,922	$42,457	$15,280		$85,659	O&M and Engr. Support

Discount Rate	7%
2000 PW Costs =	$3,530,000