W. 15-a

PARTNERS IN WASTEWATER MANAGEMENT

Metropolitan Wastewater Management Commission

partners in wastewater management

May 27, 2004

Lane County
Board of County Commissioners
125 E. 8th Ave.
Eugene, OR 97401

Subject: Missing Pages from the May 19, 2004, Board Agenda Packet Item Regarding the MWMC Wastewater Facilities Plan.

Dear Commissioners:

At the May 19, 2004, Board of Commissioners' meeting, staff representing the Metropolitan Wastewater Management Commission (MWMC) presented the MWMC's newly-adopted 2004 Facilities Plan for your consideration. Several attachments were provided to give the Board a complete background of the testimony and information that was considered by the MWMC in its review and adoption of the plan. We were unaware, until after the meeting, that some of the material we had submitted was not included in the Board agenda packet. Therefore, we are forwarding these materials to you at this time. Please incorporate them into the attachments to the staff report as outlined below.

The first set of material was part of the MWMC April 22, 2004, public hearing on the Facilities Plan and should have been included in your packet as part of "Attachment 3: April 22, 2004 MWMC Meeting Minutes." The second set of material was part of the MWMC May 6, 2004, public hearing on the Facilities Plan, and should have been included as part of "Attachment 4: May 6, 2004 MWMC Draft Meeting Minutes." This includes: (1) written responses to the issues raised by the Home Builders Association of Lane County, prepared by CH2M HILL, which was discussed at the meeting; (2) a letter from Jonathan Gasik, Senior Environmental Engineer, Department of Environmental Quality; (3) written testimony submitted by Joshua Skov; and (4) written testimony submitted by the Home Builders Association of Lane County.

We regret any inconvenience this may have caused. If you have any questions regarding this material or the plan itself, please do not hesitate to call me at 726-3700, or Susie Smith, MWMC General Manager, at 726-3697.

Sincerely,

Anne Ballew

Anne Ballew
MWMC President

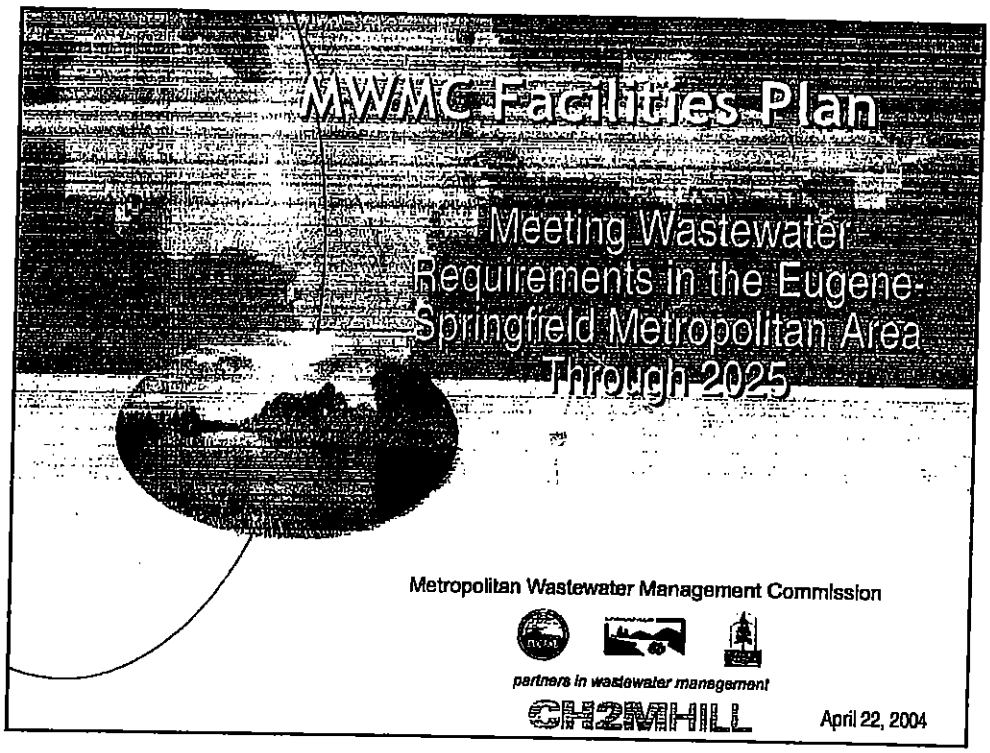
Attachments

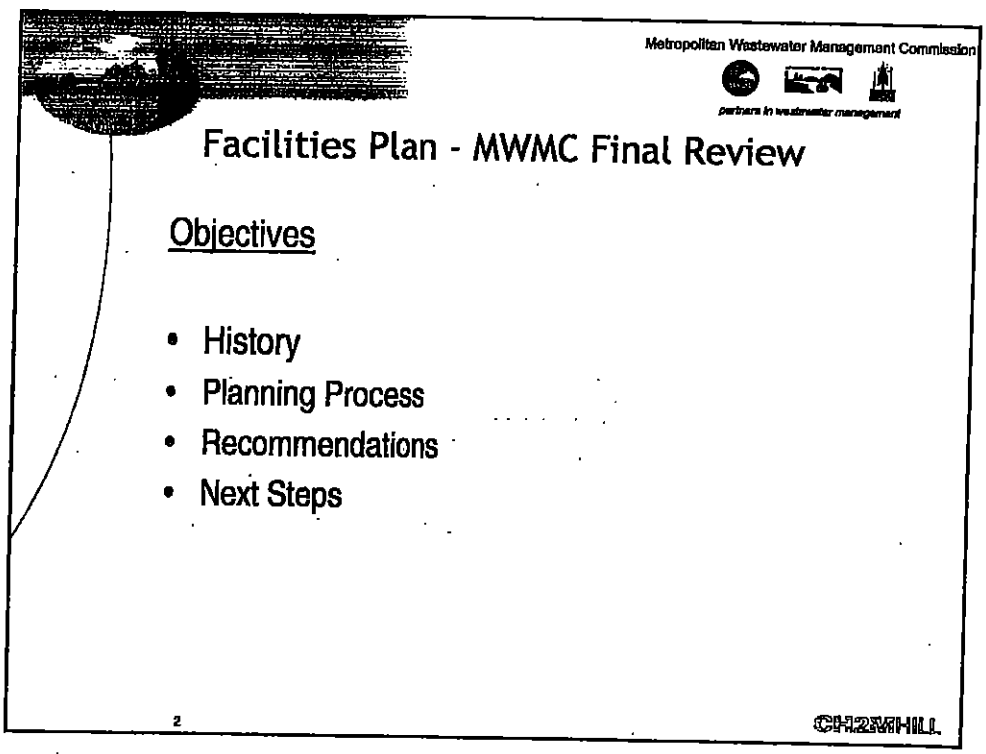
c: Bill VanVactor, Lane County
Zoe Gilstrap, Lane County
Susie Smith, MWMC General Manager
Dan Brown, MWMC Executive Officer
Peter Ruffier, Wastewater Division Director
Kurt Corey, Eugene Public Works Director
G. David Jewett, MWMC Legal Counsel

PART OF ATTACHMENT 3

MWMC APRIL 22, 2004 MEETING MINUTES

Copy of CH2M HILL's slide presentation


MWMC Facilities Plan
Meeting Wastewater Requirements in the Eugene-Springfield Metropolitan Area Through 2025
Metropolitan Wastewater Management Commission
partners in wastewater management
CH2MHILL
April 22, 2004


Metropolitan Wastewater Management Commission
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Facilities Plan - MWMC Final Review
Objectives
• History
• Planning Process
• Recommendations
• Next Steps
2
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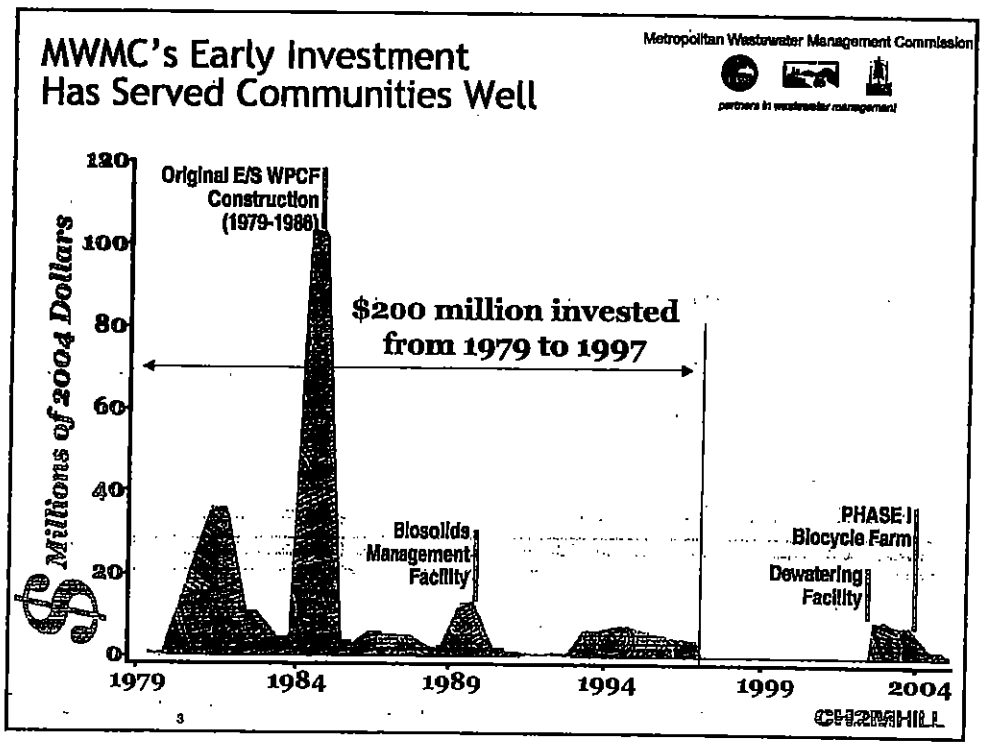
MWMC's Early Investment
Has Served Communities Well
Metropolitan Wastewater Management Commission
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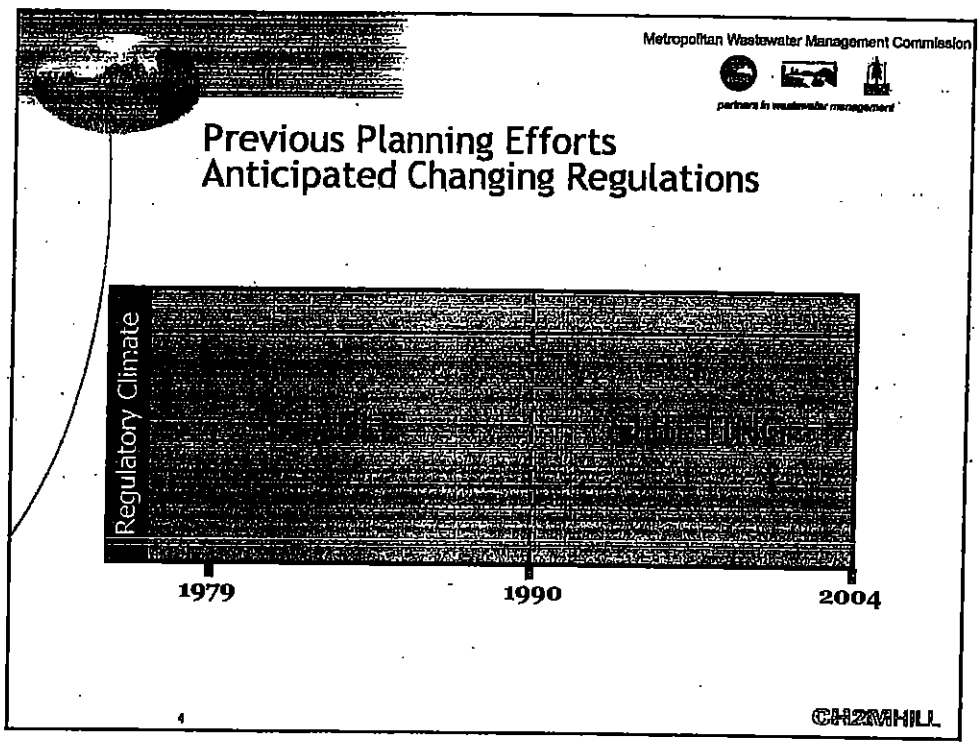
Millions of 2004 Dollars
120
100
80
60
40
20
0
Original E/S WPCF Construction (1979-1986)
$200 million invested from 1979 to 1997
Biosolids Management Facility
PHASE I Biocycle Farm
Dewatering Facility
1979
1984
1989
1994
1999
2004
3
CH2MHILL


Metropolitan Wastewater Management Commission
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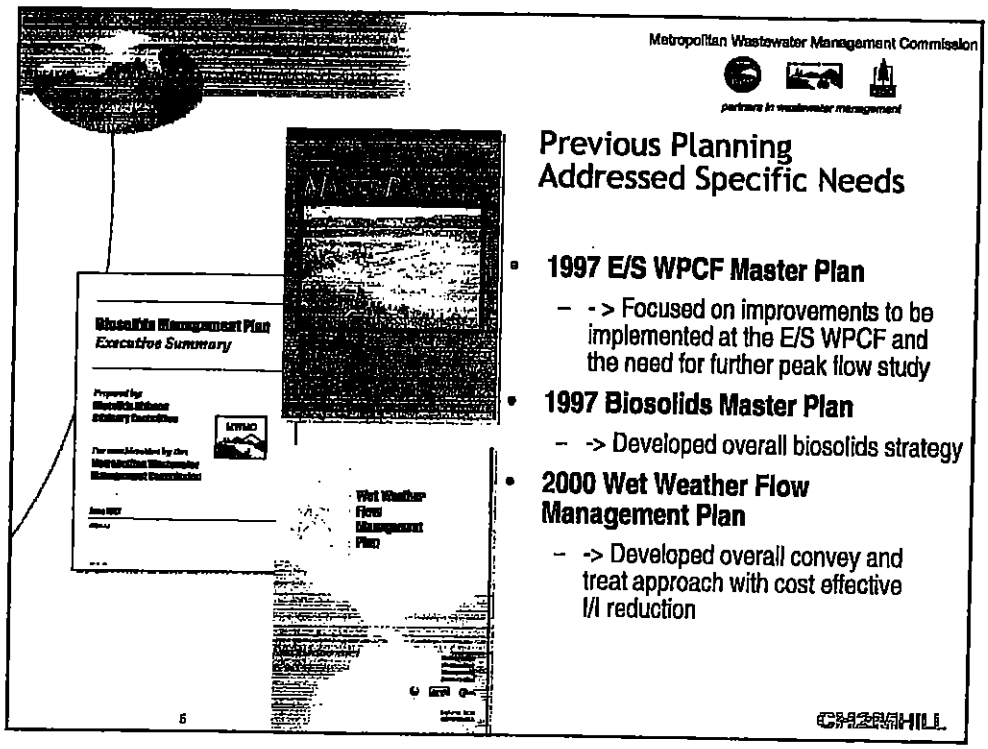
Previous Planning Efforts
Anticipated Changing Regulations
Regulatory Climate
1979
1990
2004
4
CH2MHILL


Metropolitan Wastewater Management Commission
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Previous Planning Addressed Specific Needs
• 1997 E/S WPCF Master Plan
– -> Focused on improvements to be implemented at the E/S WPCF and the need for further peak flow study
• 1997 Biosolids Master Plan
– -> Developed overall biosolids strategy
• 2000 Wet Weather Flow Management Plan
– -> Developed overall convey and treat approach with cost effective I/I reduction
Executive Summary
5
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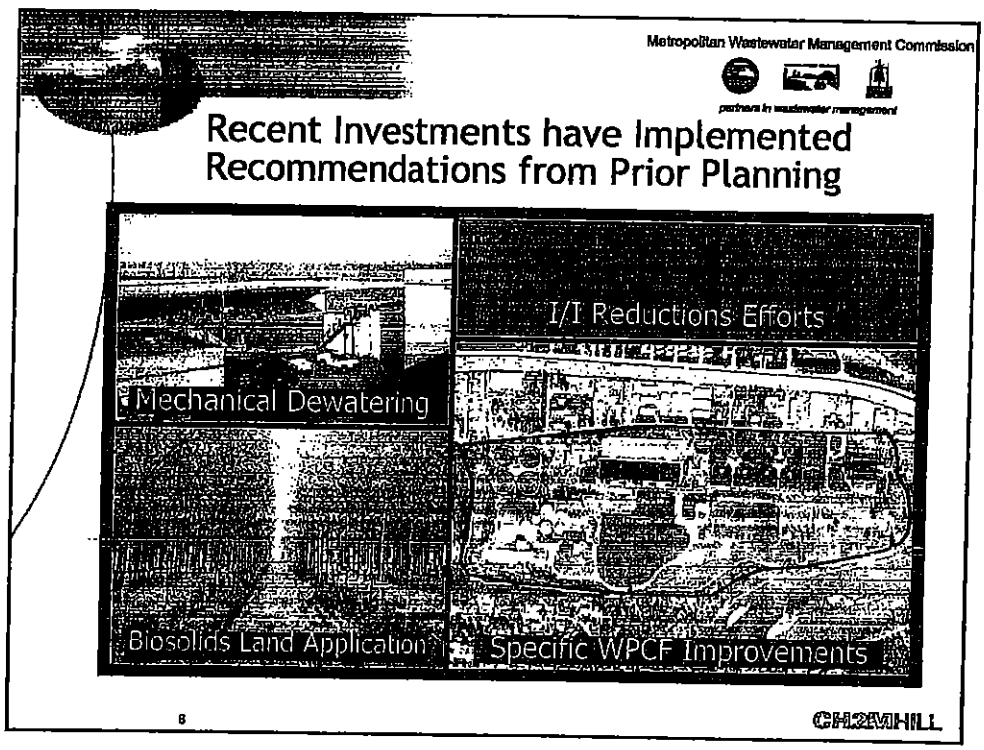
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Recent Investments have Implemented Recommendations from Prior Planning
I/I Reductions Efforts
Mechanical Dewatering
Biosolids Land Application
Specific WPCF Improvements
8
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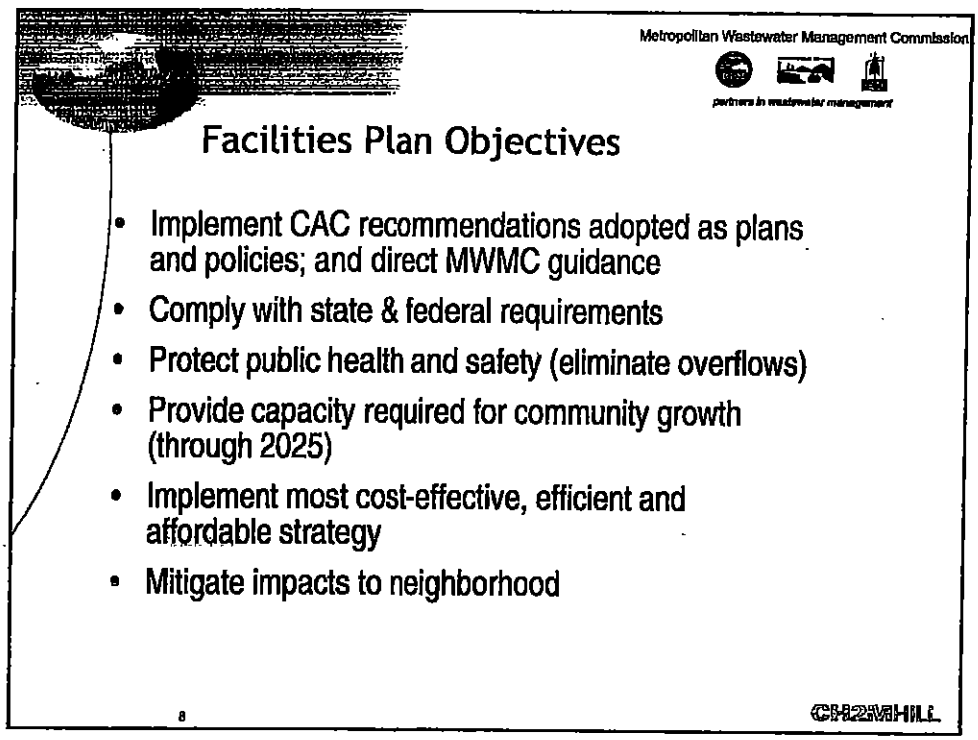
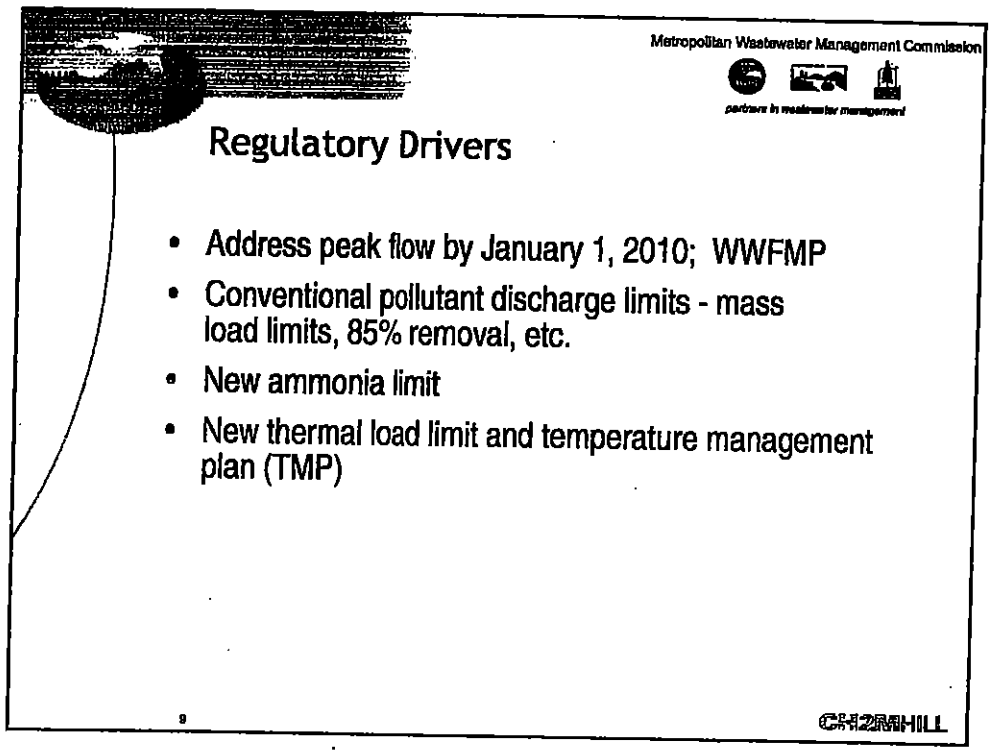
Typical Costs per Residence

ASSUMING 8 CCF PER MONTH

5,000 gallons/month = 6.68 Units/month = 6.68 ccf/month

Wastewater Utility	Monthly User Rate	SDC
Albany	$ 32.30	$ 2,147
Ashland	$ 15.42	$ 2,482
Bend	$ 20.64	$ 1,020
Clean Water Services (Hillsboro example)	$ 20.47	$ 2,300
Corvallis	$ 24.62	$ 4,198
Eugene	$ 15.67	$ 971
Gresham	$ 20.97	$ 1,900
Lake Oswego	$ 22.19	$ 1,837
McMinnville	$ 44.34	$ 2,400
Portland	$ 32.87	$ 2,420
Roseburg	$ 21.98	$ 1,400
Salem	$ 19.99	$ 2,391
Springfield	$ 19.84	$ 1,167
Tri-City (West Linn example)	$ 20.97	$ 2,660

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Regulatory Drivers
• Address peak flow by January 1, 2010; WWFMP
• Conventional pollutant discharge limits - mass load limits, 85% removal, etc.
• New ammonia limit
• New thermal load limit and temperature management plan (TMP)
9
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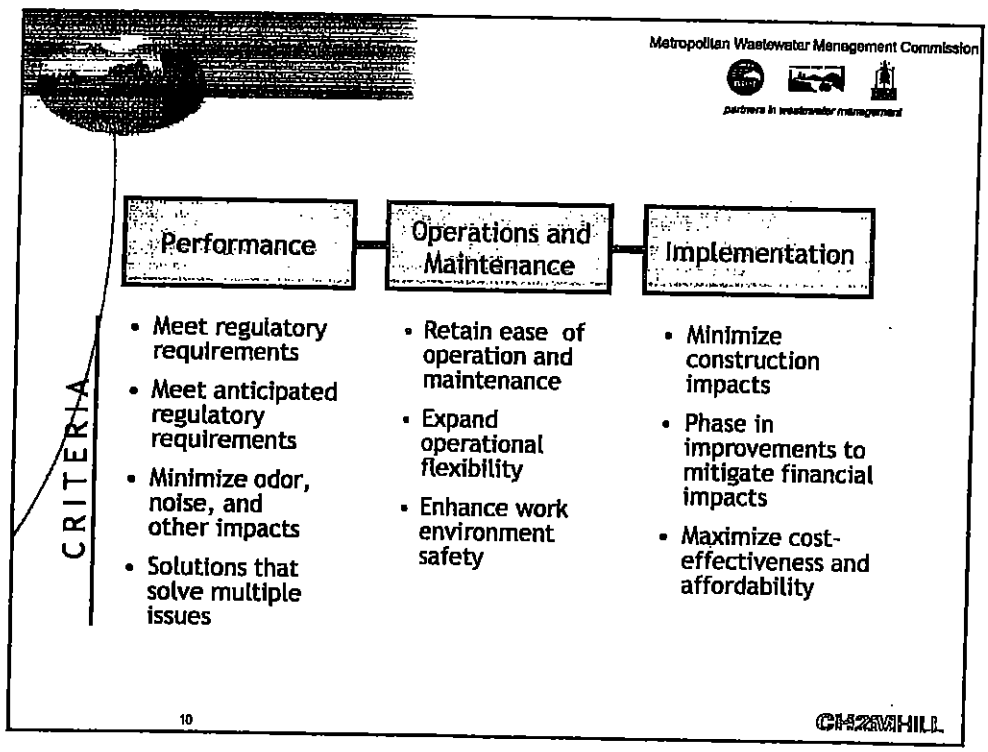
Metropolitan Wastewater Management Commission
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Performance
Operations and Maintenance
Implementation
CRITERIA
• Meet regulatory requirements
• Meet anticipated regulatory requirements
• Minimize odor, noise, and other impacts
• Solutions that solve multiple issues
• Retain ease of operation and maintenance
• Expand operational flexibility
• Enhance work environment safety
• Minimize construction impacts
• Phase in improvements to mitigate financial impacts
• Maximize cost-effectiveness and affordability
10
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Summary of Current Conditions

	Current Average Rated Capacity	Historical Values (1990 – 2002)
Population	N/A	157,000 to 217,000
Dry Season Maximum Month Flow (mgd)	49	26 to 49
Wet Season Maximum Month Flow (mgd)	75	36 to 90

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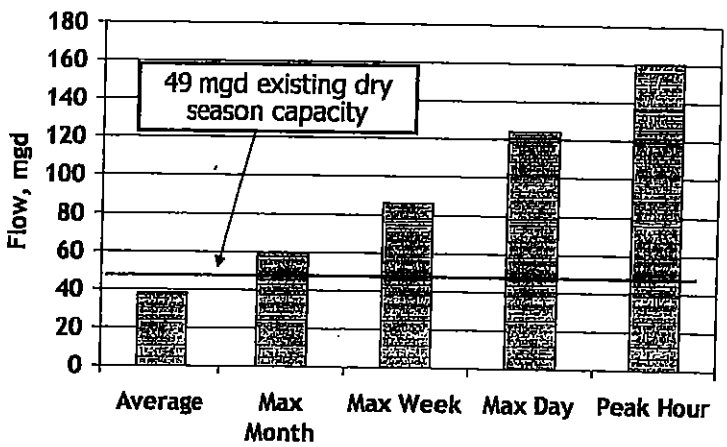
Projected 2025 Dry Season Flows



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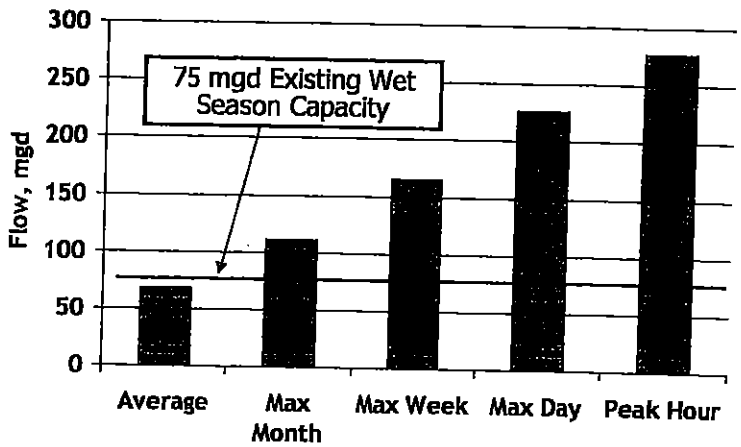
Projected 2025 Wet Season Flows



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Current Facility Has a Peak Flow Capacity Deficit

FACILITY	CAPACITY (mgd)	ADDITIONAL (mgd)	2025 NEED (mgd)
Influent Pumping	175	102	277
Pretreatment	175	102	277
Primary Treatment	90-110	50-70	160
Secondary Treatment	100-110	50-60	160
Disinfection	175	102	277
Outfall	175	102	277

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Detailed Analysis Yielded Five Alternatives

System Alternative	Estimated Cost *(Millions of 2004 Dollars)*	Meets Planning Objectives
1 – Do Nothing	-	No
2 - Full Primary and Secondary	$233 million	Meets Most
3 – Full Primary	$167 million	Meets Most
4 – High Rate Clarification	$157 million	Meets All
5 – Parallel Primary Secondary	$144 million	Meets All

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If Regulatory Acceptance is not obtained, Alternative 4 will be advanced for Regulatory Approval.

MWMC Preferred Solution: Alternative 5

DEQ Approval

YES

Implement Preferred Alternative 5

NO

Implement Recommended Alternative 4

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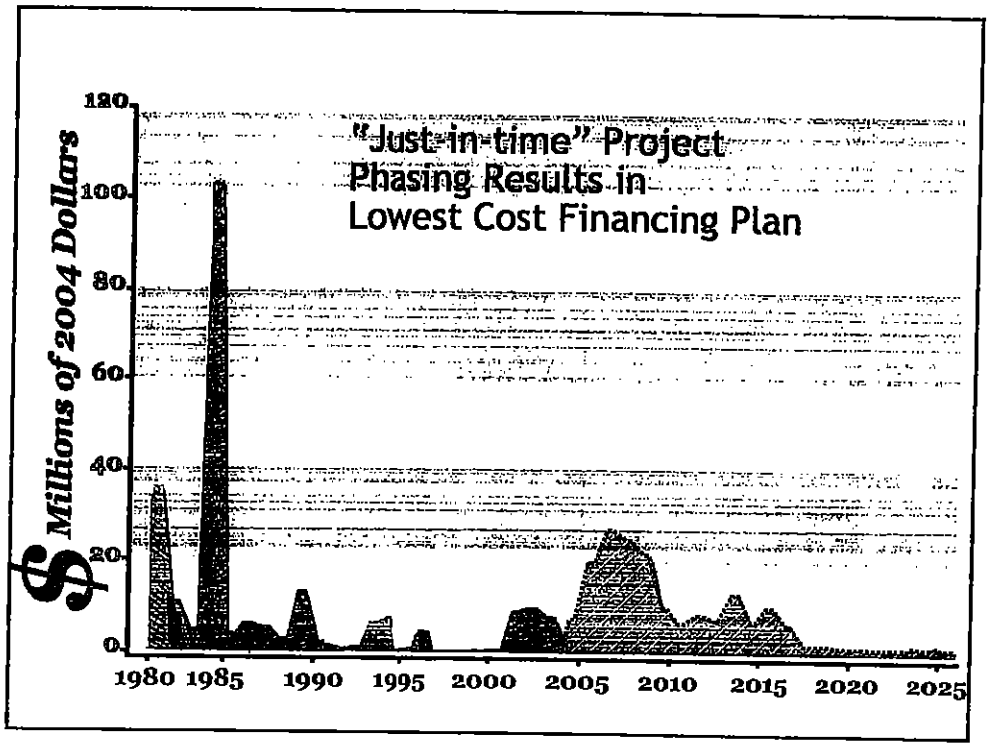
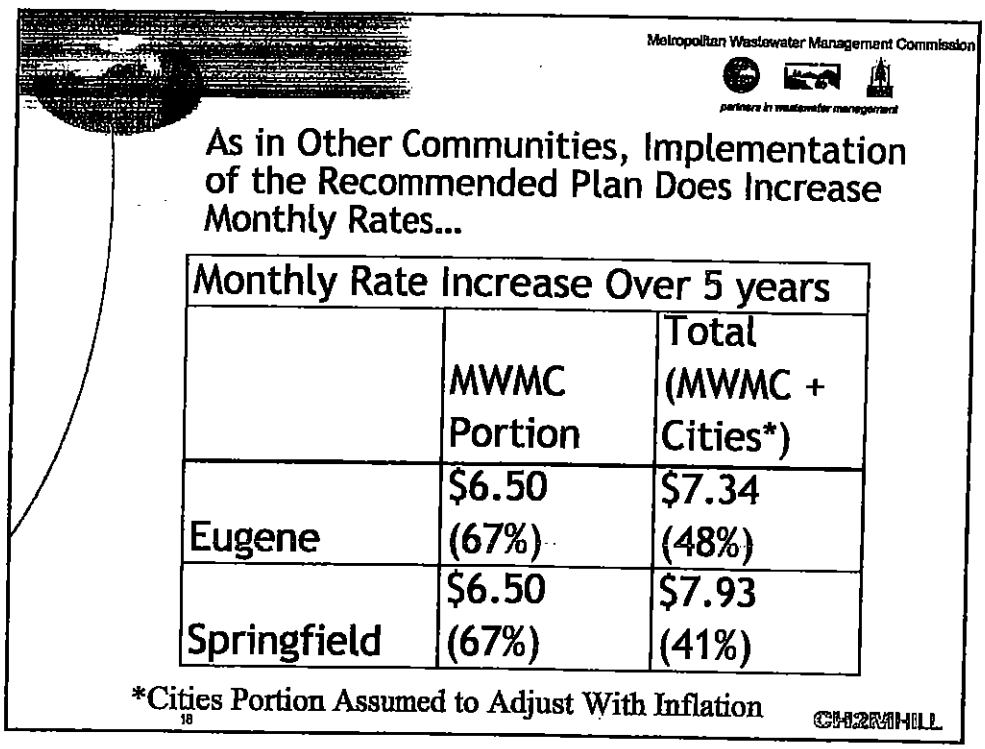

"Just-in-time" Project Phasing Results in Lowest Cost Financing Plan
$ Millions of 2004 Dollars
120
100
80
60
40
20
0
1980 1985 1990 1995 2000 2005 2010 2015 2020 2025


Metropolitan Wastewater Management Commission
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As in Other Communities, Implementation of the Recommended Plan Does Increase Monthly Rates...
Monthly Rate Increase Over 5 years
MWMC Portion
Total (MWMC + Cities*)
Eugene
$6.50 (67%)
$7.34 (48%)
Springfield
$6.50 (67%)
$7.93 (41%)
*Cities Portion Assumed to Adjust With Inflation
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... and SDCs

SDC Increase FY2003/04 to FY2004/05		
	MWMC Portion	Total (MWMC + Cities)
Eugene	$419 (79%)	$419 (43%)
Springfield	$419 (79%)	$419 (36%)

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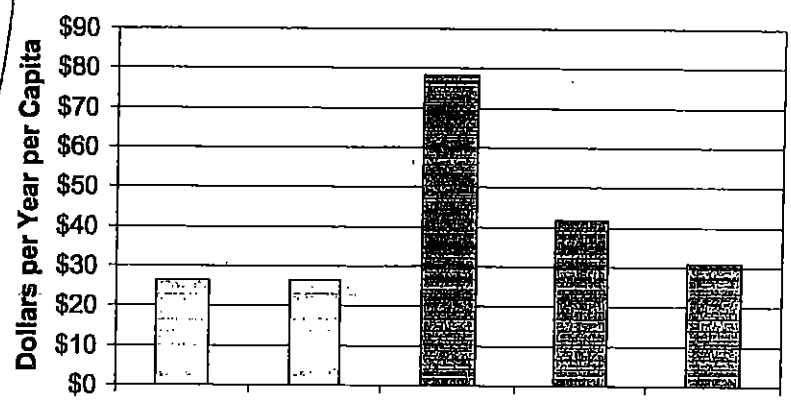
Relative to Other Communities Facing Similar Challenges - MWMC Investment is Lower

Proposed Future Capital Investment



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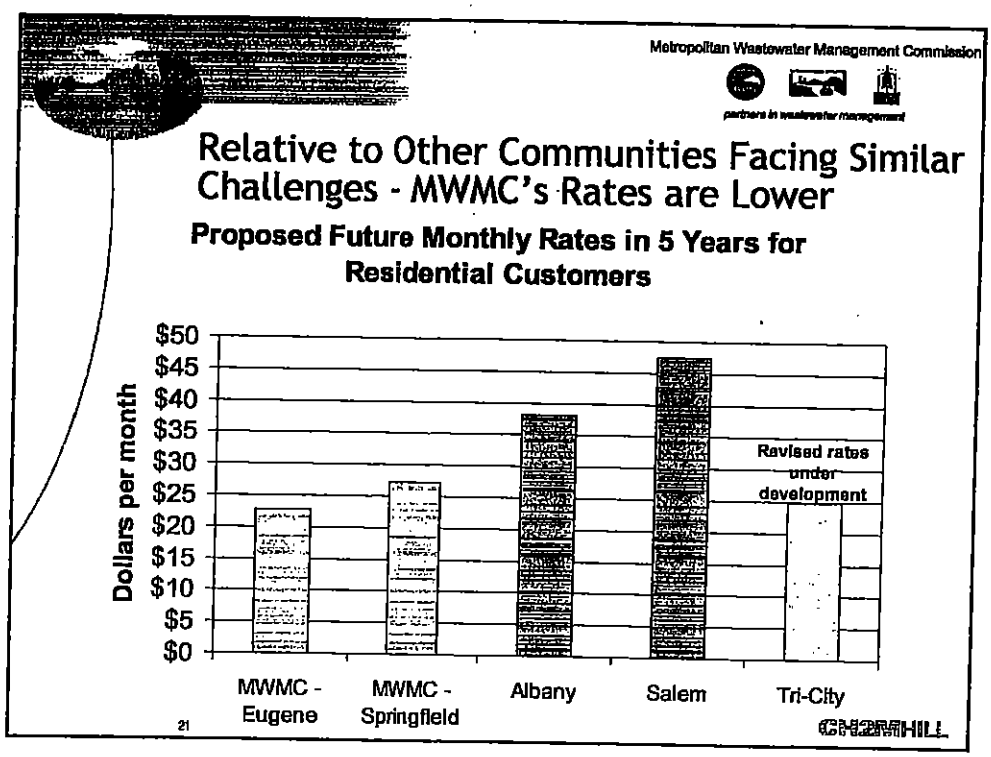
Metropolitan Wastewater Management Commission
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Relative to Other Communities Facing Similar Challenges - MWMC's Rates are Lower
Proposed Future Monthly Rates in 5 Years for Residential Customers
Dollars per month
$50
$45
$40
$35
$30
$25
$20
$15
$10
$5
$0
Revised rates under development
MWMC - Eugene
MWMC - Springfield
Albany
Salem
Tri-City
21
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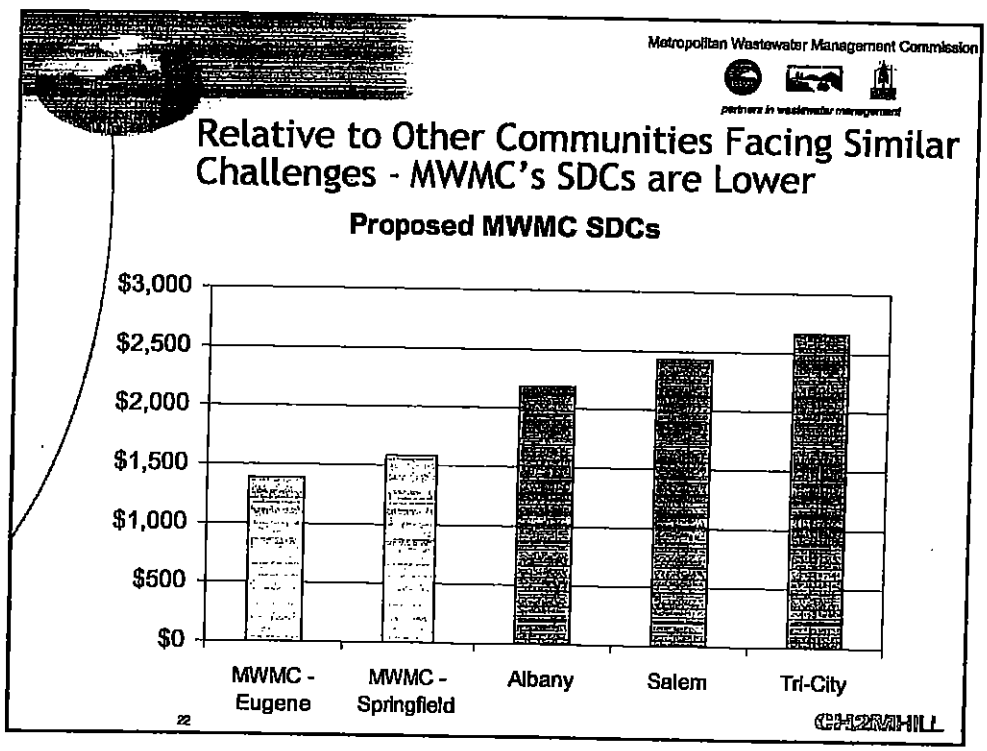
Metropolitan Wastewater Management Commission
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Relative to Other Communities Facing Similar Challenges - MWMC's SDCs are Lower
Proposed MWMC SDCs
$3,000
$2,500
$2,000
$1,500
$1,000
$500
$0
MWMC - Eugene
MWMC - Springfield
Albany
Salem
Tri-City
22
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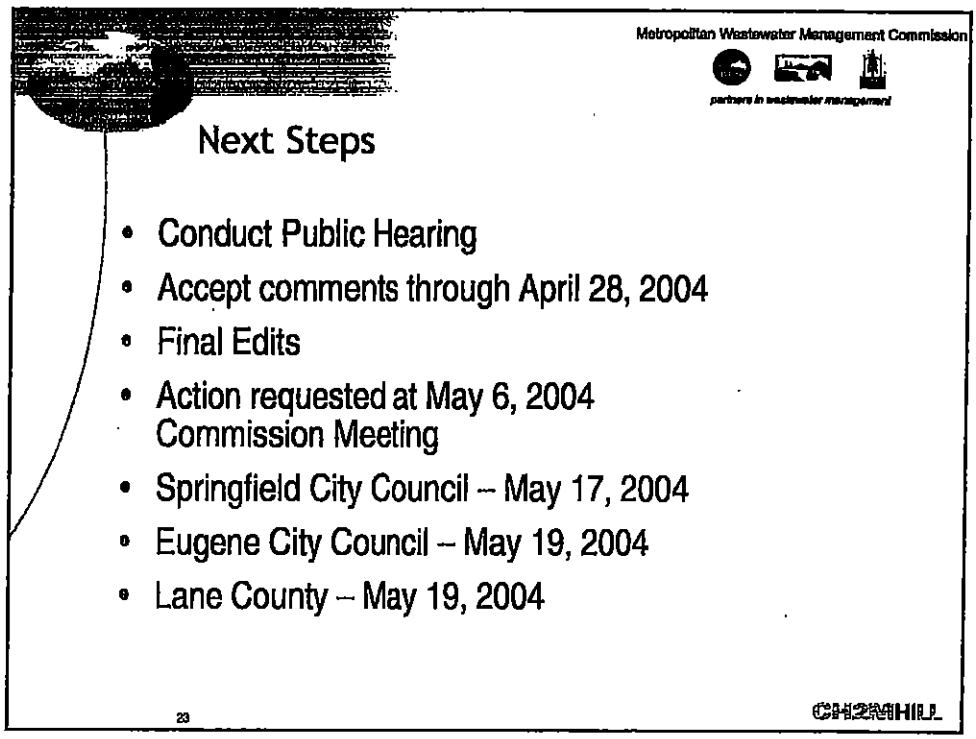
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Next Steps
• Conduct Public Hearing
• Accept comments through April 28, 2004
• Final Edits
• Action requested at May 6, 2004 Commission Meeting
• Springfield City Council – May 17, 2004
• Eugene City Council – May 19, 2004
• Lane County – May 19, 2004
23
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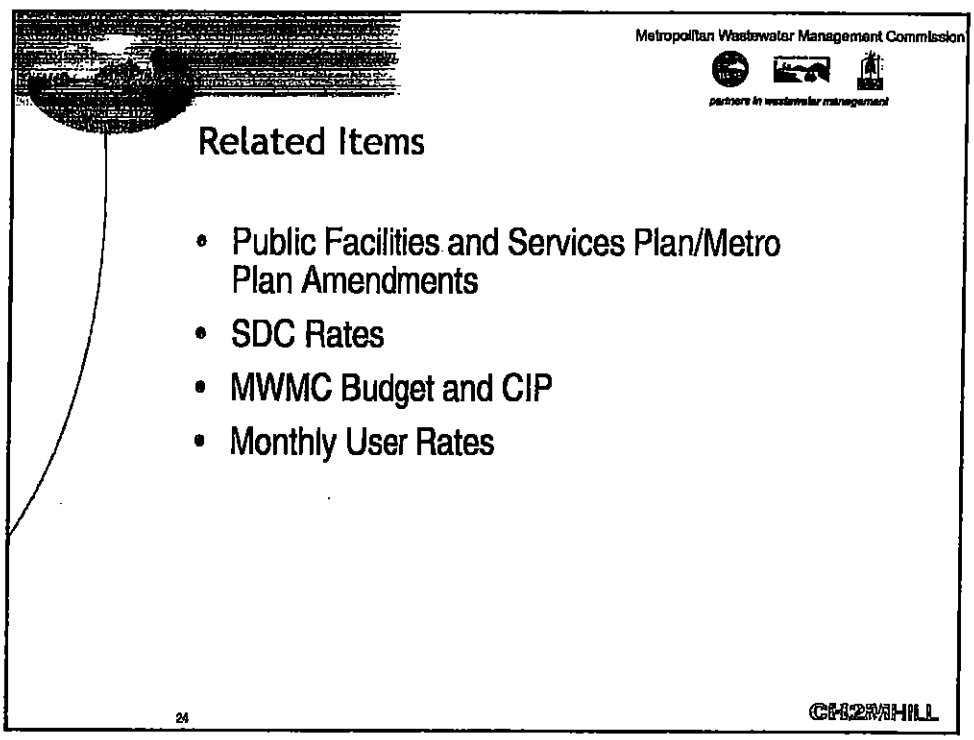
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Related Items
• Public Facilities and Services Plan/Metro Plan Amendments
• SDC Rates
• MWMC Budget and CIP
• Monthly User Rates
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PART OF ATTACHMENT 4

DRAFT MWMC MAY 6, 2004 MEETING MINUTES

Written responses to the issues raised by the Home Builders Association of Lane County, prepared by CH2M HILL

Letter from Jonathan Gasik, Sr. Environmental Engineer, Department of Environmental Quality

Written testimony submitted by Joshua Skov

Written testimony submitted by the Home Builders Association of Lane County

This document is the written testimony submitted by the Home Builders Association, with responses by CH2M HILL integrated into the text in red. This document was reviewed by the Commission at the May 6, 2004, meeting.

May 3, 2004

MWMC Commission President Inge
MWMC Commissioners
225 5th Street
Springfield, Oregon 97477

Re: MWMC Facilities Plan

Dear Commissioners:

The Home Builders submit the following comments on the proposed MWMC facility plan. The remarks are incomplete because I just became aware on Wednesday of last week that there is actually a Draft Facilities Plan Document, [**Wednesday of last week was April 28. The Draft Facility Plan was discussed in the MWMC Commissioners meeting on April 22. All of the Commissioners had copies of the Plan at that April 22nd meeting.**] and not just the spread sheets I had been working from. I also learned on Thursday that DEQ had done an evaluation of the MWMC facility. [**DEQ did not do a capacity evaluation as part of the permit renewal process. MWMC staff submitted materials from the 1997 Master Plan that was currently under development to DEQ on December 31, 1996 (over 7 years ago) as part of their permit renewal application. DEQ did not end up renewing the permit until 2002. However, their fact sheet used the information that MWMC staff had submitted back in 1996.**] I needed to spend time reading and absorbing those documents as well as preparing my written remarks. I have put together what I could in the short time available. I apologize in advance if my comments conclude abruptly or the remarks I do make do not flow cohesively.

I think in any evaluation of the facility plan, it is important to ask three questions. First, how much capacity do we have? Second, how much capacity do we need? Lastly, how much capacity are we building? I will attempt to explore each of those questions, but I anticipate in advance that I will not make it to the end.

I also have issues with some of the performance and percentage allotments assigned to SDCs that are included with the facility plan. I will address those first and then discuss the three questions I have raised above.

1. The facilities plan project list allocates 38% of the cost of the headworks to growth. This is based on the generic application of percentages provided in the SDC methodology. [**This statement is incorrect. The 38% is not based on a generic application of the percentage provided in the SDC methodology. Per the SDC methodology for determining the improvement fee cost basis, Steps I-2 and I-4 are explicitly prescribed in the methodology while Steps I-1 and I-3 are case specific depending on which project in the 20-year project is being addressed.**] According to the population projections on page 2-32 of the Facilities Plan, there is an expected population increase of just under 30% projected between 2005 and 2025. [**The Facilities Plan and the SDC Methodology is based on population growth from existing (defined as 2002) to 2025. These values are 217,737 and 297,585, respectively, which result in a 36.7 percent increase.**] According the discussion of the headworks on page 7-5, "the new facilities would be constructed to accommodate 160 mgd of dry weather capacity even though less capacity is required for total wet weather flows [**The Headworks Expansion has been sized large enough so that the existing headworks will not have to be brought on and off line on a frequent basis in the dry season. This was done to avoid excessive operation and maintenance costs.**] ." According to the SDC methodology, the maximum amount of additional dry weather capacity needed to serve growth through the year 2025 is 10 mgds (page C-1 of the methodology). Under the generic methodology allocation, preliminary treatment is allocated 25% to average flow and 75% to peak flow. It is also designated 100% to capacity. The methodology says that growth pays 100% of average flow and 29% of peak flow (which is another issue). If 25% of the headwork capacity is for average flow and the total capacity is 160 mgds, then growth would pay for 40 mgds of the dry weather capacity [**This is incorrect for two reasons. First, only 50% of the total project cost for new headworks facilities are allocated to Preliminary Treatment. The other 50% are allocated to Peak Flow Management before the costs are allocated to average and peak flow. So the percentage of total project cost allocated to growth via average flow is 12.5% (50% to Preliminary Treatment * 25% to Average Flow). There is no cost allocation to growth via average flow for the other 50% of the project attributed to Peak Flow Management. Second, applying a system capacity parameter percentage allocation to some flow amount is irrelevant. The purpose of the SDC methodology is to equitably allocate the costs of projects between growth and existing users not to determine capacity. And even if that were correct the average flow allocation percentage (whether it be 25% or 12.5 %) could not be applied to the 160 mgd value because the 160 mgd value is not in average flow units.**], even though the methodology clearly indicates that the most dry weather capacity needed to serve growth during the planning period is 10 mgds. . The amount of peak flow needed to serve growth is identified as 30 mgds. We are allocated 29% of peak flow capacity. 75% of the headworks capacity is for peak flow under the methodology - 20 mgds. [**This 75% is incorrect. As indicated above, 50% of the total project cost for new headworks facilities are allocated to preliminary treatment and 50% are allocated to peak flow management before the costs are allocated to average and peak flow. The percentage of the total project allocated to peak flow is 87.5% and is determined as follows: 50% to Preliminary Treatment * 75% to Peak Flow = 37.5% plus 50% to**

Peak Flow Management * 100% to peak flow = 50% for a total allocation to peak flow of 87.5% (37.5 + 50%) not 75%. The application of an allocation percentage to the amount of required peak flow capacity is irrelevant. Again, purpose of the SDC methodology is to equitably allocate the costs of projects between growth and existing users not to determine capacity. The 29% allocated to growth would be 35 mgds – five more needed to serve growth during the planning period. **[This is an incorrect application of the 29% (which was derived for the SDC methodology by dividing the 30 mgd (growth's share of the required peak flow capacity through 2025) by the 102 mgd (the total amount of additional peak flow capacity required through 2025). The correct application of the 29% (actually 29.4%) is to multiply it by the portion of a project cost that is allocated to peak flow within the "Capacity" portion. For the headworks expansion project this is calculated as follows: 50% to Preliminary Treatment * 75% to peak flow * 100% to "Capacity" * 29.4 % = 11% and 50% to Peak Flow Management * 100% to peak flow * 100% to "Capacity"* 29.4 % = 14.7 % for a subtotal of 25.7%. Therefore, the total allocation for growth for the Headworks expansion is 38.2 % (12.5 % from average flow and 25.7% from peak flow).]** In total, we are being charged for 35 mgds more than the methodology identifies as being needed to serve growth.**[This is incorrect based on discussion above.]** According to the methodology, growth needs 10 mgds of dry weather (average flow) and 30 mgds of peak flow. That is a total of 25% .**[This is incorrect. These numbers do not have any meaning and even if they did it is not correct to add together average flow and peak flow. The SDC methodology is not intended to be used to compute capacity, it is intended to allocate costs.]**. of the cost, not the 38% that is allocated. The difference in cost is $1,664,000. **[This number is invalid based on the discussed reasons presented above.]**

This problem exists throughout the allocation process and our objection is the same to each of the allocation where this problem exists. You can't charge growth for more than the capacity needed to serve growth during the planning period. In the case of the headworks, even under the proposed methodology, you can't charge more than 25% of the cost of the headworks to growth. **[This 25% value is invalid for the reasons presented above. A reality check confirms the equity of the 38% allocation to growth. Typically a "Capacity" project would be allocated 100% to growth. However, since there is a peak flow capacity deficit only 29.4 % of the peak flow capacity is allocated to growth – the remaining 70.6 % of the peak flow parameter is allocated to existing users. For the Headworks Expansion project 12.5% is allocated to average flow and 87.5 is allocated to peak flow . Since 100% of this 12.5 % (average flow portion) is allocated to growth and 29.4 % of the 87.5 % (peak flow portion) is allocated to growth it makes sense that the final resulting allocation to growth is between 25% and 50% of the total project costs. The 38 percent allocation to growth also seems right as it is slightly higher than the population increase over the study period (36.7%).**

The second major issue I have is the 29% allocation of peak flow to growth. The 2001 Wet Weather Study, prepared by CH2MHill, provided the following information:

> Peak flow estimates for conditions associated with the 5-year storm event are used to size and plan future system improvements at the treatment plant and in the collection system. Through system modeling, the 5-year peak was estimated at 264 mgd. Peak flows are attributed to high infiltration and inflow (I/I) rates in many areas of the collection system. I/I occurs from extraneous water getting into the system from illegal roof drain connections, sewer pipe cracks, and other sources. I/I is often associated with older pipes in the system which have deteriorated. Sanitary pipes in older areas are also more likely to be subject to improper storm drainage (inflow) connections when construction inspection practices were more lenient and / or such connections were allowed, creating a combined flow system. Newer pipe systems reflect improvements in construction techniques, materials, and inspection and typically exhibit far less I/I. In Eugene, 11 percent of the pipes are at least 50 years old. In Springfield, the percentage of pipes at least 50 years old is 15 percent. Because the primary sources of I/I are in the existing system and limited I/I is anticipated from system expansion, growth in the system does not contribute significantly to projected system deficiencies. The 5-year peak is estimated at 298 mfd. Of this peak, only 4 percent or 12 mgd, is estimated to be the result of I/I from future pipes.

In a response to a question from Chris Clemow on the CAC, I believe that CH2MHill increased the 4% to 4.7%, which I have no objection to. [**The current SDC methodology attributes 5.2% of the peak flow I/I to growth: 14.5mgd / 277mgd. This 5.2% is in line with the previous 4.7% and is slightly higher primarily because the updated collection system modeling is now estimating a slightly reduced peak flow of 277 mgd. Future total peak flows are estimated to be less due to I/I reduction practices in the existing system, therefore, the percentage due to growth increases**] The point is that we are not responsible for 29% of peak flow management costs [**29% is growth's share of the peak flow capacity needed through 2025 – 30 mgd divided by 102 mgd**] Peak flow is made up of the average flow (currently less than 30 mgds) [**This is incorrect. Current maximum month dry weather flows**] and the rest is I/I. We are already allocated 100% of the average flow costs under the methodology and pay that separately. Let's assume that average flow in 2005 will be 49 mgds. Our portion of peak flow costs would be 4.7% of 249 mgds or 11.7 mgds. [**No, incorrect. The portion of the peak flow is 30 mgd divided by 102 mgd. The 4.7 % value is a percentage of I/I only. If growth's allocation is going to be based on I/I only and not peak flow, then we have to be consistent and allocate to existing users based on I/I only as well – whereas the average flow would have to be subtracted out of the remaining peak flow which is 72 mgd (102 mgd less 30 mgd)**] I am willing to accept the 14 mgds of I/I that CH2MHill suggested was growth's contribution to 298 mgds of peak flow which would include all of the average flow that we are paying for under average flow. [**No, incorrect. Once project costs are allocated to average flow they are no longer available to be allocated to peak flow and vice versa.**] The 29% currently allocated to growth for peak flow isn't supported by the data. [**The 29% or 30 mgd of 102 mgd is derived in Table C-2 of the SDC methodology and is supported by data. The I/I assumed to be generated by growth is less than 30% of the I/I**

generated by existing MWMC users. Some communities in the Willamette Valley corridor are using 35%.]

I. **How Much Capacity Do We Have?**

General Facility Capacity Information:

The MWMC treatment facility was designed in 1977 and became operational twenty years ago, in 1984. It was designed to serve a population of 277,100 persons and it was estimated in 1977 that number of persons served by the facility would be reached in 2005. The current number of persons served by MWMC in 2004 is 217,690 persons, so the initial 1977 population projection that the facility would reach its service capacity next year was substantially in err. Based solely on population to be served, the facility would currently be used at 72.5% of its capacity [**This assumption only works if you assume that the level of treatment required in 1977 is the same as the level of treatment required in 2025 which is not a correct assumption**] is is based solely on the original design .

"Design of the original WPCF (*Water Pollution Control Facility*) was based on demographic and population data established in the mid-1970's. The facility was designed to provide adequate sewerage capacity through the year 2005 for a projected population of 277,100. This projection was made for the sewer service area that existed in the 1970s. However, the growth rate during the 1980s was significantly less than projected. This trend in the growth rate was common throughout much of Oregon because of depressed economic conditions during the mid-1980s (April, 2004 Draft MWMC Facilities Plan, page 1-6).

In addition, LCOG population projections for the 1990s were higher than the actual numbers provided by the 2000 US Census.

Another factor significantly affected the projected use of the facility's capacity – water conservation efforts. A substantial part of our wastewater, both dry weather flows and wet weather flows, is just what the name suggests – water. I am not referring now to inflow and infiltration (I/I), but rather the composition of the wastewater that is released from homes, businesses, and industrial plants. Whether the wastewater originates from the shower we take in the morning, the dishwashers at a restaurant, or a car wash, the vast majority of our wastewater is simply water. The amount of wastewater sent from homes and businesses to the sanitary sewer pipes correlates so closely to our actual water usage that our winter water consumption is the basis upon which our MWMC sewer bill is calculated. Every year since the mid or late 80s, because of water conservation efforts, our per capita consumption of water has declined. We flush our toilets with less water and use more efficient shower heads. Because of past drought years, we turn off the water while brushing our teeth rather than leaving the tap running, as was customary in the 70s.

The Register Guard recently ran an article reporting that while the state population had grown by 17% (I believe since 1990), water consumption had increased by only 2% in the same period. Some of the water conservation results in water savings that do not impact our wastewater flows, better means of watering our lawns, for example; however, much of the conservation has occurred inside homes and businesses. The result is that the MWMC facility can actually serve a larger population than the 277,100 persons originally projected in the mid-70s.[**Under the same conditions and treatment levels established in 1977, there may be a small impact and a slight increase in population served. However, reduced water usage in homes does not translate to reduced organic loadings at treatment plants, which define capacity of some unit processes. Under required treatment levels established now and anticipated for 2025, this statement is absolutely incorrect. Seasonal variations in climate and I/I into the system have a much more significant impact on wastewater flows than do water conservation practices.**

There are three sources that we can use to determine how much facility capacity still exists: The 1997 MWMC Master Plan prepared by CH2MHill;[**This plan is not based on the current NPDES permit and cannot be used to assess current capacity**] the 2004 Draft MWMC Facilities Plan prepared by CH2MHill; and the 2002 Fact Sheet and NPDES Wastewater Discharge Permit Evaluation prepared by the Department of Environmental Quality (DEQ).[**This fact sheet was developed from information MWMC staff provided DEQ in 1996 while applying for a permit renewal. The information was taken from the 1997 Master Plan. DEQ took 5 years to respond to the permit renewal request and turned the application for permit renewal into a fact sheet in 2002 without updating the information.**] The facility has many components but reference is frequently made to four more generic categories of capacity: (1) Liquid effluent dry weather flow, (2) liquid effluent wet weather flow, (3) BOD and TSS dry weather capacity, and (4) biosolids processing. It is important to look at each of the larger category's capacity individually.

Liquid Effluent Dry Weather Capacity:

DEQ defines the dry season as May 1 through October 31, although the 2002 permit appears to extend the emergency overflow criteria for a storm event greater than the one-in-five-year, 24-hour duration storm through May 21 rather than May 1, and allows that same criteria to extend to June 1 if there is no increase in risk to beneficial uses. The facility has two important effluent dry weather design capacities. The average monthly dry weather flow capacity is 49 million gallons per day (mgds). The average monthly capacity most closely reflects the base flow from residences, businesses, and industrial plants. [**Since the NPDES permit is based on this flow and associated loads, the actual maximum month dry season flow must meet all the criteria associated with the ADWF, and thus is the proper standard for comparison of maximum month flow**] It contains some I/I, but the amount is minimal. The other important design capacity is that of dry weather maximum month, which is 66 mgds. [**This is not correct. This is not the current rating of the plant for dry season maximum month. This value was obtained from the 1997 Master Plan, in which the effluent requirements**

were different at the time of that rating. The current maximum month rating is the ADWF of 49 mgd stated in the current NPDES permit.] Some of the months classified as "dry" by DEQ, especially May, can in fact be very wet and contain substantial amounts of I/I. Therefore, the design capacity for the dry season maximum months flows is higher than that of average monthly flows to reflect the presence of the I/I. **[This is incorrect. The presence of I/I into the system during critical months does not allow the plant to treat more flow just because it is slightly more dilute. Other issues such as nitrification, mixed liquor concentrations, and secondary clarification control facility capacity under these conditions. The facility still must meet all the same criteria during this period as outlined by the ADWF permit conditions. Because of this, mass limits under these higher flow conditions pose more stringent effluent requirements than the normal concentration limits. The existing facilities would likely not achieve the required 30-day average effluent requirements for wastewater flows in excess of the ADWF stated in the permit.]** The difference between the specific design capacity and the actual corresponding flows represents the capacity available to meet future needs.

The 1997 MWMC Master Plan examined the amount of dry season average monthly flows as well as the dry season maximum monthly flows to determine the amount of capacity that was being used by current users. It also projected the available years of capacity remaining in that part of the facility.

It identified the dry weather average month capacity as 49 mgds and the actual average monthly flow as 26 mgds (Table 3-3, page 455). It also identified the dry weather maximum month design capacity as 66 mgds (page 456). **[These capacity assessments were based on NPDES permit requirements at the time of the study, no provisions for ammonia, recent SSO regulation, and thermal load limits]**

It reported that "average dry weather flows were 53 percent of plant design capacity (page 440). It estimated that there were 30 years remaining dry weather monthly average capacity and 27 remaining years of dry weather maximum month capacity – taking us to the years 2027 and 2024 respectively (Table 3-5 Remaining Life of E/SWPCF, page 457). It concluded the dry weather capacity analysis as follows: "Ample dry weather capacity remains well beyond the current LCOG planning horizon (page 456)"

The 2004 Draft MWMC Facilities Plan, also prepared by CH2MHill, also identifies the dry weather average month design capacity as 49 mgds. However, the amount of monthly flow, either average month or maximum month is dependent upon population estimates. There is a serious discrepancy in the population estimates that CH2MHill provided on March 26, 2004, for the Draft System Development Charge Methodology, in which CH2MHill estimated the current population served in 2002 as 217,690, and the estimated 2005 population estimate of 229,145 found in the draft facilities plan. **[This is incorrect. There is no discrepancy. One number is 2002 population and one is the estimated 2005 population. This represents roughly an additional 3,800 people served per year which is consistent with the population projections being used for this Facilities Plan.]** Based on the latter 2005 population, CH2MHill estimates actual dry

season average flows of 29.6 mgds and dry season maximum monthly flows of 46 mgds (page 4-13). That means we would be using 60.4% of our dry season average monthly capacity and 69.7% of our dry season maximum monthly capacity, using the design capacities of 49 mgds and 66 mgds respectively.[**66 mgd is not the current maximum month rating of the plant, so these numbers have no value**]

CH2MHill identifies the projected 2025 dry season average flow at 38.4 mgds, still substantially below the 49 mgd average flow design capacity, and the 2025 dry weather maximum month flow at 59.3, also below the design capacity of 66 mgds. .[**66 mgd is not the current maximum month rating of the plant, so these numbers have no value**]

DEQ also provided an evaluation of the MWMC treatment facility in 2002 in conjunction with the renewal of our NPDES wastewater discharge permit. It noted:

> The design Average Dry Weather Flow (ADWF) for the facility is 49 million gallons per day (MGD). The ADWF is the estimated maximum flow during May 1 to October 31 (expressed as average daily flow), at which the design engineer expects the treatment facility can still meet all effluent limits. [**The definition here states the point at hand. The ADWF is the maximum flow at which the design engineer expects the facility can still meet all the effluent limits. This is 49 mgd under the current NPDES permit**] The dry weather flows do not contain the high levels of infiltration and inflow that are associated with the winter in Oregon. Therefore, the design dry weather flows are used mostly to estimate how much treatment capacity there is for organic loads. The current actual dry weather flow for May 1 to October 31, for the past two years, is 28.6 MGD, [**This was based on information supplied in 1996, and does not reflect the last 7.5 years of data and the new NPDES permit**] On the basis of the current flows, this facility is at approximately 60% of organic treatment capacity. Based on the current low flows compared to the design flows, and the lack of effluent violations, no expansion of the facility is needed at this time (page 2).

To summarize the availability of dry weather effluent capacity, seven years ago, the MWMC Master Plan estimated that we were using 53% of our dry weather capacity. Five years later, in 2002, DEQ dismissed the importance of even discussing the liquid effluent dry weather capacity and noted that the real issue was the amount of capacity for treatment of organic loads (such as BOD and TSS) [**This is incorrect. With the new NPDES permit, nitrification and secondary clarification control secondary treatment capacity.**] and estimated that capacity at approximately 60%. Two years [**This was actually 7.5 years later, as the fact sheet was based on information supplied in 1996, as the date of the fact sheet implies**] later, using the numbers provided by CH2MHill in the draft facilities plan, the estimated the dry weather average month capacity would be just over 60% and the dry season maximum month at just under 70%. However, CH2MHill is also estimating that I/I will be reduced by approximately 17% during the planning period, which would make more dry season maximum capacity

available **[This is incorrect, the reduction of wet season I/I will not make more capacity available for dry season]** (Draft System Development Charge Methodology (page C-2).

All three of the sources indicate that we have substantial dry weather capacity remaining in the facility, which is what we would expect, given the reduced population projections and the effect of water conservation efforts on plant flows. **[As stated earlier, the sources obtained there information from the same source – a capacity assessment done over 7 years ago done under a different NPDES permit (i.e. no ammonia limit). Also, water conservation efforts do not reduce organic loading.]**

However, CH2MHill does contend in the proposed System Development Charge Methodology that the available dry weather capacity is substantially less than that provided by the other sources. In that document, CH2MHill claims that we are currently using 89% of our liquid effluent dry weather capacity. CH2MHill arrives at that conclusion by calculating the available capacity differently than they did in the Master Plan or than DEQ does in its evaluation of the plant capacity. **[As stated earlier, DEQ never did any evaluation. They took what was given to them in 1996 and included it in the 2002 permit fact sheet. DEQ is currently requiring MWMC /CH2M HILL to use maximum month when assessing capacity.]** In the Master Plan CH2MHill arrived at the dry weather capacity by comparing the dry season maximum month design capacity of 66 mgds with the dry season maximum month flows (apples to apples). DEQ compared the dry season average month design capacity of 49 mgds with the dry season average flows (apples to apples). **[DEQ has requested that this be the approach taken.]** In the system development charge methodology, CH2MHill compares the dry season average flow design (49 mgds) with the dry season maximum monthly flow (apples to oranges). The design capacity used does not include any significant I/I, but the maximum monthly flow does. Needless to say, the available capacity evaporates immediately, and we go from having 40% of the dry season capacity available to meet future needs to having only 11% of the dry season capacity available. That is an incredible difference. While I haven't seen any place in the facility plan where current dry season capacity is identified, **[see Table 3.2.2-3 on page 3-11]** CH2MHill suggests that the same comparison would be used.

> The existing average dry weather design flow for the WPCF, as stated in the current NPDES permit is 49 mgd. This is defined as the average day flow calculated from May 1 through October 31. Although stated as an average dry weather capacity, the facility must meet the effluent requirements on a 30-day average flow (monthly basis). Because any 30-day period, including the maximum 30-day flow period (or maximum month flow) during the dry season, must meet the NPDES effluent flow and load requirements stipulated for the average dry season flow, it is prudent to compare the actual dry season maximum month flow (DSMM) to the average dry weather design flow in order to assess treatment capacity. This method was reviewed by DEQ staff and verified as the appropriate method.

When I had talked with Mark Hamlin at DEQ on previous occasions, I was assured that DEQ only looks at output and results and that DEQ does not tell jurisdictions how to calculate capacity.[**The NPDES permit defines effluent limits, which inherently define how capacity is determined**] I called Mark Hamlin last Thursday after reading in the draft facilities plan that DEQ staff had said the apples to oranges comparison was the appropriate method to calculate the dry weather capacity. Mark then told me that he had evaluated the MWMC dry weather capacity at 60% in the Fact Sheet and NPDES Wastewater Discharge Permit Evaluation. [**The information in this fact sheet was developed in 1996 before there was an ammonia limit and thermal load limit placed into the NPDES permit and is therefore no longer valid**] Furthermore, it is clear in that evaluation that DEQ did not use the method being proposed by CH2MHill. Instead, DEQ compared the average flow capacity of 49 mgds with the average flows of 28.6 mgds. If DEQ preferred the method being proposed by CH2MHill, why wouldn't they use it themselves? [**They are now saying to use maximum month.**] And why would we voluntarily dismiss 29% of our current capacity as unavailable for future needs when DEQ estimates our remaining dry weather capacity at 40%, and says that "Based on the current low flows compared to the design flows, and the lack of effluent violations, no expansion of the facility is needed at this time?

Liquid Effluent Wet Weather Capacity:

Wet weather capacity applies to the facility's capacity from November 1 to April 30. Just as dry weather capacity comes in two design capacities, so does wet weather capacity. One is the average monthly wet weather capacity and the second, and probably the more important one, is peak flow capacity.

The wet weather average monthly flow is similar to dry season average monthly flow. It contains a significant amount of I/I just because it is measured in the wet months, but the plant has sufficient capacity to handle the flow.[**The current peak flows to the facility exceed the capacity of the facility**] The Master Plan identifies the average wet weather design capacity at 70 mgds and the average wet weather flow at 41.8 mgds (Table 3-3, page 455). DEQ, in its evaluation in 2002, said the average wet weather flow design is 75 mgds and the current average wet weather flows were 56.4 mgds. The draft facilities plan notes the average wet weather flow to be 52.5 mgds (page 4-13) and the design capacity to be 75 mgds [**The 2005 maximum month wet weather flow is estimated at 85.7 mgd, a condition exceeding the current plant capacity**] (footnote to Table 5.1.1-1, page 5-3). The draft facilities plan projects that the average wet weather flows in 2025 will be 68.2 mgds – below the 75 mgd design capacity.[**The 2025 maximum month flow is estimated at 110.8, significantly exceeding the current available capacity**] The Master Plan projected that we had 18 years of remaining average wet weather flow capacity, or capacity until the year 2015. If the design capacity of 75 mgds had been used rather than the 70 mgds, the remaining years of capacity would be further extended.

The critical capacity issue involves peak wet weather flows. We have a serious I/I problem. In January, 2001, CH2MHill and MWMC staff released the Wet Weather Flow Management Plan, which described the problem:

> The treatment plant was designed in the 1970s to provide adequate capacity through 2005. From a base flow and loading standpoint, the treatment plant performs well within its capacity (49 million gallons per day [mgd]) in dry-weather months. However, winter rainfall creates flows to the treatment plant that exceed the plant's peak capacity (175 mgd) on average several times per year and exceed full (secondary) treatment capacity (104 mgd) more frequently...
>
> Peak flow estimates for conditions associated with the 5-year storm event are used to size and plan future system improvements at the treatment plant and in the collection system. Through system modeling, the 5-year peak was estimated at 264 mgd. Peak flows are attributed to high infiltration and inflow (I/I) rates in many areas of the collection system. I/I occurs from extraneous water getting into the system from illegal roof drain connections, sewer pipe cracks, and other sources. I/I is often associated with older pipes in the system which have deteriorated. Sanitary pipes in older areas are also more likely to be subject to improper storm drainage (inflow) connections when construction inspection practices were more lenient and / or such connections were allowed, creating a combined flow system. Newer pipe systems reflect improvements in construction techniques, materials, and inspection and typically exhibit far less I/I. In Eugene, 11 percent of the pipes are at least 50 years old. In Springfield, the percentage of pipes at least 50 years old is 15 percent... Because the primary sources of I/I are in the existing system and limited I/I is anticipated from system expansion, growth in the system does not contribute significantly to projected system deficiencies. The 5-year peak is estimated at 298 mfd. Of this peak, only 4 percent or 12 mgd, is estimated to be the result of I/I from future pipes.
>
> Estimates made at the time of design of the treatment plant, relative to the amount of rainfall-derived infiltration and inflow (RDII) that could be cost-effectively removed, were overly optimistic. This has resulted in insufficient capacity to manage peak flows at the treatment plant and has increased the risk of sanitary sewer overflows (SSOs) at a number of locations in the collection system. Example problems include basement and street flooding and discharges to stormwater facilities and receiving waters. Although the magnitude of wet weather flows differs greatly, they are significantly diluted because the source of the majority of the flow is rainwater, not sanitary sewage. Treatment plant flow data indicates that wet weather flow is diluted such that the concentration of typical pollutants in wet weather flow is 50 percent to 60 percent of that in dry weather flow (Executive Summary, page 1465).

The Master Plan also talks of the lack of peak flow capacity.

> Peak flows have approached or exceeded the hydraulic design capacity of the plan in seven instances, but no NPDES permit violations have occurred – mass limits have been suspended in those instances. Flows greater than the peak design capacity have been pumped by relying on redundant, spare pumps. The frequency of peak flow exceedances will increase as the base, average wastewater flow increases. This could potentially lead to NPDES permit violations caused by sanitary sewer overflows or exceedance of effluent quality permit limits.

All of the documents agree that the peak flow design capacity is 175 mgd. Everyone also agrees that under our permit we are required to have enough capacity during the wet weather months to treat the wastewater flow that would occur during a storm event described as "the one-in-five-year, 24-hour duration storm" and that we do not have sufficient capacity to do so.

Effluent Biosolid Loads:

BOD (now often seen as CBOD) and TSS can be measured in either lbs/day or dry tons. In the reports, you will see both used. Sometimes you may wish to compare data from different reports that are expressed in different measurements (lbs/day or tons/year). To convert lbs / day to dry tons / year, multiply the lbs / day by 0.1825. To convert dry tons per year to lbs / day, multiply by 5.4795.

Under our permit, we are required to remove at least 85% of the monthly average for BOD and TSS. The existing capacity for BOD is 66,000 lbs per day and for TSS is 71,600 lbs per day (Master Plan, page 455; System Development Charge Methodology, page C-1). The Master Plan identifies the average dry weather BOD load as 28,682 lbs/day and that of TSS as 31,056 lbs/day (Table 3-3, page 455).[**These were average dry season values, not the 30-day maximum that the plant experiences in the dry season and which permit compliance is based on**] It estimates that there is a remaining life BOD average month capacity in the facility of 40 years and maximum month remaining capacity of 33 years. TSS has a remaining average month capacity of 35 years and a maximum month capacity of 29 years (Table 3-5, page 457).[**These values are based on prior NPDES permits. For purposes of the facility plan, current maximum month values are used as surrogate parameters for ammonia**]

The Master Plan concludes: "For BOD, the E/SWPCF has substantial remaining capacity to about 2030 as a result of lower than design per capita loadings and historical growth rates (page 462). It also speaks to TSS. "The results of remaining capacity, as measured by TSS, are also substantial, to about 2026 (page 462).

DEQ, in its 2002 Fact Sheet [**Again, these are based on 1996 values and were not updated to reflect the new NPDES permit**] and evaluation discusses the different summer (dry season) and winter (wet season) BOD and TSS permit requirements. It concludes:

> "A review of recent monitoring data indicates the permittees should generally be able to comply with the permit limits. No changes from the previous permit are proposed... An 85 percent removal efficiency limit is included in the proposed permit to comply with federal requirements.[**This requirement added significant difficulty to comply with the permit as a result of the dilute wet weather flows. For example, if influent concentrations of TSS are 100 mg/L due to high I/I volumes of I/I, then the plant must meet 85% removal, which translates to an effluent concentration of approximately 15 mg/L. This is significantly lower than the concentration limit of 30 mg/L required on a monthly basis.**] An examination of the DMR data indicates the permittee will be able to meet the limit with the current facilities (page 10).

The Draft Facilities Plan indicates that our permit has a Maximum Week TSS permit limit / removal requirements of 28,000 lbs / day and that CBOD has a Maximum Week requirement of 24,000 lbs/day. Actually, the permit does not refer to Maximum Week requirements. The permit chart refers to Monthly Average lbs/day, Weekly Average lbs/day, and Daily Maximum pounds. [**This is correct, but the effluent limits must be met for the average of all 7-day periods, including the maximum 7-day average period (or maximum week)**] CH2MHill chose to convert the requirement into Maximum week terms rather than use the measurements provided by DEQ in the permit. [**The weekly permit requirements do not change, they are set for any 7-day period, whether you call it weekly average, or maximum week**] The answer would appear to be the same as why we lost all of our dry weather capacity under the System Development Charge Methodology. Rather than using the Monthly Average measurement provided in the permit to compare to the Monthly Average capacity of 49 mgds (apples to apples), the decision was made to convert the data to Maximum Week lb/day and compare that number to the average flow design capacity of 49 mgd (apples to oranges).

> Dry season mass limitations for both CBOD and TSS outlined in the NPDES permit are based on the current dry season flow of 49 mgd. The mass limit requirements must be met for the highest 30-day flow period in the dry season (maximum month basis). Even if the constant concentration limits for CBOD and TSS are met, the mass limits imply a lower concentration requirement if the wastewater flows exceed the current dry weather design capacity or if the future dry weather design capacity of the facility is increased. Concentration limits was well as percent removal requirements are also specified in the NPDES permit... Permit removal limits apply; however, they are not a factor during the dry season because the mass and concentration limits are significantly more stringent (page 5-4).

The question arises again. Why measure things differently than DEQ does? DEQ, in the permit, provides three different means to measure the CBOD and TSS in both the dry season and the wet weather seasons. Why convert to a fourth measurement that is not provided by DEQ? Since DEQ refers to the average monthly dry weather design capacity of the facility of 49 mgds and provides a limit for monthly average flow, why not use

monthly average flow to arrive at your capacity (apples to apples)? By converting to Maximum Week, I/I is again included in the flow but not in the design capacity, which is automatically going to skewer the measurement and result in a significant loss of facility capacity.

As a result, CH2MHill determined in the System Development Charge Methodology that the facility is now operating at 83% of our BOD capacity and at 90.4% of our TSS capacity. Seven years ago, when CH2MHill prepared the Master Plan, they concluded that we had a great deal of effluent BOD and TSS capacity. "The remaining treatment capacity of the E/SWPCF is substantial for average dry and wet weather flow conditions and conventional pollutants (BOD and TSS) (page 450).

DEQ, as you will recall, placed the capacity used for effluent organic loads at 60%. It also said: "The current permit contains CBOD and TSS removal efficiency limits of 85 percent. The facility has been able to comply with the permit limits and has not had any violations even during the extremely wet months (page 4 of the Fact Sheet and evaluation)." As you recall, DEQ also concluded that our current facilities would allow us to continue to remain in compliance with our permit.

A second decision made by CH2MHill and MWMC staff also affected the amount of BOD and TSS capacity reportedly available. When calculating BOD capacity, for example, CH2MHill used the following formula for the System Development Charge Methodology:

Current BOD = (0.19 x 217,690 x 1.3) + 2,402 = 54,800 lbs/day where

> 0.19 [**0.185 us the correct number**] is the selected pounds per capita per day based on dry season values from 1990 to 2002
>
> 217,690 is the population served in 2002
>
> 1.3 is the selected peaking to convert average dry season load to DSMM (dry season maximum month) load (based on 1990 to 2002 data)

The key piece is the selected pounds per capita per day. Per capita loads, according to the Master Plan, have been lower than the design capacity and the Master Plan identified the per capita load for BOD as 0.17. On two different occasions (the last time at the second public forum), Matt Noeson from CH2MHill assured me that the change in the per capita pounds per day from the 0.17 they had used in the Master Plan to the 0.19 being used now was not based upon any new data or any change in how the capacity should be calculated. [**This is incorrect. The change was made based on an additional 7.5 years of flow and load data since the 1997 Master Plan**] The change in per capita load was done solely for the purpose of further reducing our chances of having a permit violation during a wet May. [**This is incorrect. BOD would not be an issue even in a wet May. TSS would be the controlling factor**] However, the effect on the

amount of BOD capacity is significant. The used capacity drops to 50,500 lbs per day. Changing the per capita load results in an additional 8.5% loss of BOD capacity.

If we substitute the population figures that are used in the Draft facility plan for those used above, we have the following formula:

(0.19 x 229,145 x 1.3) + 2,402 = 59,000 lbs per day [**This is not how the SDC values were calculated. This equation is using 2005 values for population. The SDC values were calculated based on 2002 population**] that we are using of our 66,000 lbs/day capacity, we are now using 89.5% of our BOD capacity.

This is the dilemma that we face. According the Master Plan prepared by CH2MHill seven years ago, we were using about 46% of our BOD capacity. According to DEQ, five years later, we are using approximately 60% of our capacity and our current facility would allow us to comply with our new permit requirements. However, according to CH2MHill and MWMC staff in the Draft Facility Plan, the sky is falling. As a ratepayer, I would feel most comfortable going with the more moderate assessment of DEQ and assume that we are using 60% of our BOD and TSS capacities and have 40% available for future use.

The same argument applies to TSS capacity. According the Master Plan, we were using 46% of our TSS capacity seven years ago. According to DEQ in 2002, we were using approximately 60% of our capacity. Using the population numbers in the facility plan and the formula provided by CH2MHill in the System Development Charge Methodology, we are generating the following amount of TSS:

(0.21 x 229,145 x 1.4) + 2,224 = 69,593 lbs/day of TSS. [**This is not how the SDC values were calculated. This equation is using 2005 values for population. The SDC values were calculated based on 2002 population**] Our capacity is 71,600, so according CH2MHill and MWMC staff, we are currently using 97% of our TSS capacity. As in the BOD calculation, we are now using a different per capita load of .21 rather than the .19 used in the Master Plan.

Why such a large difference. I believe it is the combination in the draft facility plan of comparing dry weather average flow design capacity with maximum rather than average flows and the change in the peaking factor (for calculation dry weather flow, which I did not discuss) and per capita loads for calculating the capacity of BOD and TSS. I don't know what peaking factors and pounds per capita that DEQ used. I do know that they did not compare maximum flows with average flow design capacity to calculate capacity. DEQ seems to have taken the most moderate approach compared to either the Master Plan or the Draft Facilities Plan and for that reason would appear to be more reliable in their capacity evaluations.

(As an interesting side note. In February of this year, CH2MHill and MWMC staff were actually using larger per capita loads for BOD and TSS - .20 and .22 respectively. If we were to use the February 0.22 pounds per capita and plug it into the TSS formula using

the population estimates in the draft facility plan, we would be generating 72,800 lbs per day of TSS, which would actually exceed the design capacity of 71,600. The following month, the pounds per capita for both BOD and TSS were reduced by .01.)

Another indication of the difference in how CH2MHill and MWMC staff are calculating current biosolid loadings is in the tons currently being generated by the facility. In Table C-3 of the Draft System Development Charge Methodology (page C-6), MWMC staff and CH2MHill indicate that we have a current loading of 5,927 tons per year. DEQ, in its 2002 evaluation of the facility, indicated that "The MWMC wastewater treatment facility generated 4,240 dry metric tons during the reporting period January 1, 2000 to December 31, 2000 (page 3)." I have not yet determined if the 5,927 tons of biosolids reported by CH2MHill is in metric tons or not, but even if you convert the DEQ number from metric tons to tons, the numbers aren't close. The mere passage of three years can not explain a 21% or 28% difference between DEQ's and MWMC's numbers.

In short, my concern in the assumptions behind the facilities plan is the dramatic loss of capacity resulting from the new manner in which CH2MHill and MWMC is calculating capacity. To have a facility go from having a great deal of capacity to almost none in seven years is troubling. To indicate that this new method of calculating capacity is sanctioned by DEQ would seem to be unsupported by DEQ's own actions, given that DEQ used the more conventional method of calculating capacity in its 2002 evaluation of the MWMC facilities.

How Much Capacity Do We Need?

Maybe I should change this section to What Should We Build? I just got off the phone with John Gasik, at the Medford DEQ. He told me that he was in the process of reviewing the MWMC facilities plan. Being ignorant of DEQ processes, I asked him why we didn't wait and approve the facilities plan after he had had a chance to review it. He told me that he couldn't really review the plan until the jurisdiction had selected which of the required options it prefers. He said that the community may choose to do something much different.

We talked about a $144 million cost after only 20 years. He told me that the treatment facilities only have a lifetime of about 20 years before you have to start replacing things. That bothers me somewhat because almost all of $144 million is for new capacity. There is some rehabilitation costs, but it is relatively minor. Twenty years from now, are we looking at putting out $300 million to replace the eight secondary clarifiers, etc?.[**The existing secondary clarifiers have been in service for 20 years. The facility plan assumes that they will be in service for an additional 20 years, or 40 years total. There condition will be assessed at the end of the next 20 years to determine their suitability for future treatment. Facilities do not have an infinite life.**]

Eugene Planning Commissioner Rusch mentioned at the meeting of the joint planning commissions that he would like to have a discussion about the type of facilities we build. He said that we are using a design that comes from the sixteenth century, but that

revolutionary changes have been made in the last twenty years. I mentioned that to John Gasik and he agreed. [**This is incorrect. The technology proposed for MWMC is some of the most recent technology available for all facilities (fine screening, washing, compacting, thickening outside primary clarifiers, step feed plug flow process with anoxic selectors, sodium hypochlorite disinfection, and peak flow management). The step feed plug flow process with anoxic selectors is an innovative process that has seen extensive use and has proven itself over the past 10 years. It has been proposed and accepted for treatment at some of the largest and most advanced wastewater facilities in the world (Singapore Facility).**]

If our current plant really is close to the end of its functional life, why are we not considering the new techniques, especially if we are putting out $144 million to basically add similar capacity to a facility that is becoming obsolete? Why are the new sanitary techniques part of the option discussion? $144 million will always seem like a lot of money to me, but if we end up having to shell that out and then a lot more to rehabilitate the current facility, why not have a discussion about the new technology? [**Many new technologies were discussed, considered, and adopted in the facilities plan.**]

(By the way, it was John Gasik who approved of the way the capacity is being calculated after it was explained to him, although he did say that he thought it was to address a technical issue. The impact on the actual capacity was evidently not the issue. I think it needs to be an issue when you are talking about that much capacity.)

Sincerely,

Roxie Cuellar
Director of Government Affairs

ATTACHMENT 4
To Draft 05-06-04 MWMC Minutes
DEQ Letter

Oregon
Theodore R. Kulongoski, Governor

Department of Environmental Quality
Western Region
201 W Main, Suite 2-D
Medford, OR 97501
541-776-6010
FAX 541-776-6262

May 4, 2004

Matt Noesen, P.E.
CH2M HILL
825 Multnomah, Suite 1300
Portland, OR 97232-2146

Re: Metropolitan Wastewater Management Commission (MWMC)
File No. 55999
Wastewater Facilities Plan

Dear Mr. Noesen:

As discussed on the telephone today, the Department has developed guidance for calculating design flow for wastewater treatment plants in western Oregon. This document is available on our website at http://www.deq.state.or.us/wq/wqrules/Qstp5DSMflow.htm.

Section 3 of this document discusses the use of various flows as design parameters. In Western Oregon, the flows in most sewage systems vary widely because they receive a significant amount of inflow and infiltration (I/I) and there is a wide variation in rainfall received during the dry and the wet seasons. In addition, 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. Therefore, the Department stopped using average flows as a design basis for sewage treatment systems.

The Department's current expectation is that sewage treatment systems fully comply with the requirements of their NPDES permits for flows up to those caused by the 1-in-5 year 24-hour winter storm (maximum day wet weather flow) and the 1-in-10 year 24-hour summer storm (maximum day dry weather flow). Therefore, the capacity of the wastewater treatment system should be evaluated based on maximum flows (monthly, weekly, and daily), and not based on average flows.

Flows estimated using the method described in the guidelines should be considered the minimum baseline estimate for current flows from which to project future (design year) flows. DEQ has consistently requested the design year to be 20 years from the anticipated project completion date.

Please feel free to call me at (541) 776-6010, extension 230, if you have any additional questions.

Respectfully,

Jonathan Gasik, MS, PE
Senior Environmental Engineer

cc: Mr. Troy McAllister, PE, Project Manager, City of Springfield, Environmental Services, 225 Fifth St. Springfield, Oregon 97477
DEQ Medford Office Files

To: MWMC
From: Joshua Skov
Re: Proposed MWMC Facilities Plan

I have noticed recent discussion and public comment on MWMC's Facilities Plan, and I would like to add to the formal record what I consider to be a balanced view of what is proposed. As a citizen, local business owner and member of the SDC methodology committee, I believe it is important for me to offer my perspectives on the proposed work by MWMC. I have three points, which can be summarized easily:

1. The proposed Facilities Plan protects our quality of life.
2. MWMC has fulfilled its responsibility to its constituents with responsive, thorough and transparent public process.
3. The SDCs generated by the methodology and Facilities Plan are low by any reasonable standard or benchmark.

Let me address each of these briefly.

First, the proposed Facilities Plan protects our quality of life. The current plan will address growth in Lane County and rising water quality requirements. Both of these are inevitable. With the population of the Willamette Valley set to double over the next 40-50 years, we face a serious challenge in ensuring the health of our watershed. Let me be clear: this is not some purely "ecological" issue; rather, this is about water, which will increasingly become a concern in maintaining quality of life all over the country. A close look at our population growth, energy needs, agricultural development, land use and the potential impacts of global climate change leads to a simple conclusion: we can no longer take water for granted. This plan is vital to addressing our needs given emerging challenges and constraints.

Second – and briefly – MWMC has done excellent work engaging a wide variety of constituencies. If some views have not prevailed, it is not because they have not been represented. Overall, I consider MWMC's work – from meeting with homebuilders, to the CAC for the improvement plan, plus the thorough SDC methodology process – to have been ample, effective, democratic and fair. At this point, to delay their work any more would be to violate the spirit of participation of the wide array stakeholders and an act of either bad faith or narrow self-interest.

Third and finally – and very briefly – *these SDCs are low by any reasonable current standard.* Virtually every comparable community in Oregon has higher SDCs, some of them much higher. However, as a result of MWMC's good work in the past, we are fortunate to need much more modest infrastructure improvements than many other communities. Although the SDCs associated with the new facilities seem high relative to our SDCs of the recent past, those SDCs were in historical perspective artificially low for various reasons, and therefore provide a poor frame of reference for current expectations.

My thanks to MWMC, staff and consultants for their excellent work. Let's get on with the improvements that the community as a whole wants and needs.

May 3, 2004

MWMC Commission President Inge
MWMC Commissioners
225 5th Street
Springfield, Oregon 97477

Re: MWMC Facilities Plan

Dear Commissioners:

The Home Builders submit the following comments on the proposed MWMC facility plan. The remarks are incomplete because I just became aware on Wednesday of last week that there is actually a Draft Facilities Plan Document, and not just the spread sheets I had been working from. I also learned on Thursday that DEQ had done an evaluation of the MWMC facility. I needed to spend time reading and absorbing those documents as well as preparing my written remarks. I have put together what I could in the short time available. I apologize in advance if my comments conclude abruptly or the remarks I do make do not flow cohesively.

I think in any evaluation of the facility plan, it is important to ask three questions. First, how much capacity do we have? Second, how much capacity do we need? Lastly, how much capacity are we building? I will attempt to explore each of those questions, but I anticipate in advance that I will not make it to the end.

I also have issues with some of the performance and percentage allotments assigned to SDCs that are included with the facility plan. I will address those first and then discuss the three questions I have raised above.

1. The facilities plan project list allocates 38% of the cost of the headworks to growth. This is based on the generic application of percentages provided in the SDC methodology. According to the population projections on page 2-32 of the Facilities Plan, there is an expected population increase of just under 30% projected between 2005 and 2025. According the discussion of the headworks on page 7-5, "the new facilities would be constructed to accommodate 160 mgd of dry weather capacity even though less capacity is required for total wet weather flows." According to the SDC methodology, the maximum amount of additional dry weather capacity needed to serve growth through the year 2025 is 10 mgds (page C-1 of the methodology). Under the generic methodology allocation, preliminary treatment is allocated 25% to average flow and 75%

to peak flow. It is also designated 100% to capacity. The methodology says that growth pays 100% of average flow and 29% of peak flow (which is another issue). If 25% of the headwork capacity is for average flow and the total capacity is 160 mgds, then growth would pay for 40 mgds of the dry weather capacity even though the methodology clearly indicates that the most dry weather capacity needed to serve growth during the planning period is 10 mgds. . The amount of peak flow needed to serve growth is identified as 30 mgds. We are allocated 29% of peak flow capacity. 75% of the headworks capacity is for peak flow under the methodology - 20 mgds. The 29% allocated to growth would be 35 mgds – five more needed to serve growth during the planning period. In total, we are being charged for 35 mgds more than the methodology identifies as being needed to serve growth. According to the methodology, growth needs 10 mgds of dry weather (average flow) and 30 mgds of peak flow. That is a total of 25% of the cost, not the 38% that is allocated. The difference in cost is $1,664,000.

This problem exists throughout the allocation process and our objection is the same to each of the allocation where this problem exists. You can't charge growth for more than the capacity needed to serve growth during the planning period. In the case of the headworks, even under the proposed methodology, you can't charge more than 25% of the cost of the headworks to growth.

The second major issue I have is the 29% allocation of peak flow to growth. The 2001 Wet Weather Study, prepared by CH2MHill, provided the following information:

> Peak flow estimates for conditions associated with the 5-year storm event are used to size and plan future system improvements at the treatment plant and in the collection system. Through system modeling, the 5-year peak was estimated at 264 mgd. Peak flows are attributed to high infiltration and inflow (I/I) rates in many areas of the collection system. I/I occurs from extraneous water getting into the system from illegal roof drain connections, sewer pipe cracks, and other sources. I/I is often associated with older pipes in the system which have deteriorated. Sanitary pipes in older areas are also more likely to be subject to improper storm drainage (inflow) connections when construction inspection practices were more lenient and / or such connections were allowed, creating a combined flow system. Newer pipe systems reflect improvements in construction techniques, materials, and inspection and typically exhibit far less I/I. In Eugene, 11 percent of the pipes are at least 50 years old. In Springfield, the percentage of pipes at least 50 years old is 15 percent. Because the primary sources of I/I are in the existing system and limited I/I is anticipated from system expansion, growth in the system does not contribute significantly to projected system deficiencies. The 5-year peak is estimated at 298 mfd. Of this peak, only 4 percent or 12 mgd, is estimated to be the result of I/I from future pipes.

In a response to a question from Chris Clemow on the CAC, I believe that CH2MHill increased the 4% to 4.7%, which I have no objection to. The point is that we are not responsible for 29% of peak flow management costs. Peak flow is made up of the average flow (currently less than 30 mgds) and the rest is I/I. We are already allocated

100% of the average flow costs under the methodology and pay that separately. Let's assume that average flow in 2005 will be 49 mgds. Our portion of peak flow costs would be 4.7% of 249 mgds or 11.7 mgds. I am willing to accept the 14 mgds of I/I that CH2MHill suggested was growth's contribution to 298 mgds of peak flow which would include all of the average flow that we are paying for under average flow. The 29% currently allocated to growth for peak flow isn't supported by the data.

I. How Much Capacity Do We Have?

General Facility Capacity Information:

The MWMC treatment facility was designed in 1977 and became operational twenty years ago, in 1984. It was designed to serve a population of 277,100 persons and it was estimated in 1977 that number of persons served by the facility would be reached in 2005. The current number of persons served by MWMC in 2004 is 217,690 persons, so the initial 1977 population projection that the facility would reach its service capacity next year was substantially in err. Based solely on population to be served, the facility would currently be used at 72.5% of its capacity.

"Design of the original WPCF (*Water Pollution Control Facility*) was based on demographic and population data established in the mid-1970's. The facility was designed to provide adequate sewerage capacity through the year 2005 for a projected population of 277,100. This projection was made for the sewer service area that existed in the 1970s. However, the growth rate during the 1980s was significantly less than projected. This trend in the growth rate was common throughout much of Oregon because of depressed economic conditions during the mid-1980s (April, 2004 Draft MWMC Facilities Plan, page 1-6).

In addition, LCOG population projections for the 1990s were higher than the actual numbers provided by the 2000 US Census.

Another factor significantly affected the projected use of the facility's capacity – water conservation efforts. A substantial part of our wastewater, both dry weather flows and wet weather flows, is just what the name suggests – water. I am not referring now to inflow and infiltration (I/I), but rather the composition of the wastewater that is released from homes, businesses, and industrial plants. Whether the wastewater originates from the shower we take in the morning, the dishwashers at a restaurant, or a car wash, the vast majority of our wastewater is simply water. The amount of wastewater sent from homes and businesses to the sanitary sewer pipes correlates so closely to our actual water usage that our winter water consumption is the basis upon which our MWMC sewer bill is calculated. Every year since the mid or late 80s, because of water conservation efforts, our per capita consumption of water has declined. We flush our toilets with less water and use more efficient shower heads. Because of past drought years, we turn off the water while brushing our teeth rather than leaving the tap running, as was customary in the 70s.

The Register Guard recently ran an article reporting that while the state population had grown by 17% (I believe since 1990), water consumption had increased by only 2% in the same period. Some of the water conservation results in water savings that do not impact our wastewater flows, better means of watering our lawns, for example; however, much of the conservation has occurred inside homes and businesses. The result is that the MWMC facility can actually serve a larger population than the 277,100 persons originally projected in the mid-70s.

There are three sources that we can use to determine how much facility capacity still exists: The 1997 MWMC Master Plan prepared by CH2MHill; the 2004 Draft MWMC Facilities Plan prepared by CH2MHill; and the 2002 Fact Sheet and NPDES Wastewater Discharge Permit Evaluation prepared by the Department of Environmental Quality (DEQ. The facility has many components but reference is frequently made to four more generic categories of capacity: (1) Liquid effluent dry weather flow, (2) liquid effluent wet weather flow, (3) BOD and TSS dry weather capacity, and (4) biosolids processing. It is important to look at each of the larger category's capacity individually.

Liquid Effluent Dry Weather Capacity:

DEQ defines the dry season as May 1 through October 31, although the 2002 permit appears to extend the emergency overflow criteria for a storm event greater than the one-in-five-year, 24-hour duration storm through May 21 rather than May 1, and allows that same criteria to extend to June 1 if there is no increase in risk to beneficial uses. The facility has two important effluent dry weather design capacities. The average monthly dry weather flow capacity is 49 million gallons per day (mgds). The average monthly capacity most closely reflects the base flow from residences, businesses, and industrial plants. It contains some I/I, but the amount is minimal. The other important design capacity is that of dry weather maximum month, which is 66 mgds. Some of the months classified as "dry" by DEQ, especially May, can in fact be very wet and contain substantial amounts of I/I. Therefore, the design capacity for the dry season maximum months flows is higher than that of average monthly flows to reflect the presence of the I/I. The difference between the specific design capacity and the actual corresponding flows represents the capacity available to meet future needs.

The 1997 MWMC Master Plan examined the amount of dry season average monthly flows as well as the dry season maximum monthly flows to determine the amount of capacity that was being used by current users. It also projected the available years of capacity remaining in that part of the facility.

It identified the dry weather average month capacity as 49 mgds and the actual average monthly flow as 26 mgds (Table 3-3, page 455). It also identified the dry weather maximum month design capacity as 66 mgds (page 456).

It reported that "average dry weather flows were 53 percent of plant design capacity (page 440). It estimated that there were 30 years remaining dry weather monthly average capacity and 27 remaining years of dry weather maximum month capacity – taking us to

the years 2027 and 2024 respectively (Table 3-5 Remaining Life of E/SWPCF, page 457). It concluded the dry weather capacity analysis as follows: "Ample dry weather capacity remains well beyond the current LCOG planning horizon (page 456)"

The 2004 Draft MWMC Facilities Plan, also prepared by CH2MHill, also identifies the dry weather average month design capacity as 49 mgds. However, the amount of monthly flow, either average month or maximum month is dependent upon population estimates. There is a serious discrepancy in the population estimates that CH2MHill provided on March 26, 2004, for the Draft System Development Charge Methodology, in which CH2MHill estimated the current population served in 2002 as 217,690, and the estimated 2005 population estimate of 229,145 found in the draft facilities plan. Based on the latter 2005 population, CH2MHill estimates actual dry season average flows of 29.6 mgds and dry season maximum monthly flows of 46 mgds (page 4-13). That means we would be using 60.4% of our dry season average monthly capacity and 69.7% of our dry season maximum monthly capacity, using the design capacities of 49 mgds and 66 mgds respectively.

CH2MHill identifies the projected 2025 dry season average flow at 38.4 mgds, still substantially below the 49 mgd average flow design capacity, and the 2025 dry weather maximum month flow at 59.3, also below the design capacity of 66 mgds.

DEQ also provided an evaluation of the MWMC treatment facility in 2002 in conjunction with the renewal of our NPDES wastewater discharge permit. It noted:

> The design Average Dry Weather Flow (ADWF) for the facility is 49 million gallons per day (MGD). The ADWF is the estimated maximum flow during May 1 to October 31 (expressed as average daily flow), at which the design engineer expects the treatment facility can still meet all effluent limits. The dry weather flows do not contain the high levels of infiltration and inflow that are associated with the winter in Oregon. Therefore, the design dry weather flows are used mostly to estimate how much treatment capacity there is for organic loads. The current actual dry weather flow for May 1 to October 31, for the past two years, is 28.6 MGD. On the basis of the current flows, this facility is at approximately 60% of organic treatment capacity. Based on the current low flows compared to the design flows, and the lack of effluent violations, no expansion of the facility is needed at this time (page 2).

To summarize the availability of dry weather effluent capacity, seven years ago, the MWMC Master Plan estimated that we were using 53% of our dry weather capacity. Five years later, in 2002, DEQ dismissed the importance of even discussing the liquid effluent dry weather capacity and noted that the real issue was the amount of capacity for treatment of organic loads (such as BOD and TSS) and estimated that capacity at approximately 60%. Two years later, using the numbers provided by CH2MHill in the draft facilities plan, the estimated the dry weather average month capacity would be just over 60% and the dry season maximum month at just under 70%. However, CH2MHill is also estimating that I/I will be reduced by approximately 17% during the planning

period, which would make more dry season maximum capacity available (Draft System Development Charge Methodology (page C-2).

All three of the sources indicate that we have substantial dry weather capacity remaining in the facility, which is what we would expect, given the reduced population projections and the effect of water conservation efforts on plant flows.

However, CH2MHill does contend in the proposed System Development Charge Methodology that the available dry weather capacity is substantially less than that provided by the other sources. In that document, CH2MHill claims that we are currently using 89% of our liquid effluent dry weather capacity. CH2MHill arrives at that conclusion by calculating the available capacity differently than they did in the Master Plan or than DEQ does in its evaluation of the plant capacity. In the Master Plan CH2MHill arrived at the dry weather capacity by comparing the dry season maximum month design capacity of 66 mgds with the dry season maximum month flows (apples to apples). DEQ compared the dry season average month design capacity of 49 mgds with the dry season average flows (apples to apples). In the system development charge methodology, CH2MHill compares the dry season average flow design (49 mgds) with the dry season maximum monthly flow (apples to oranges). The design capacity used does not include any significant I/I, but the maximum monthly flow does. Needless to say, the available capacity evaporates immediately, and we go from having 40% of the dry season capacity available to meet future needs to having only 11% of the dry season capacity available. That is an incredible difference. While I haven't seen any place in the facility plan where current dry season capacity is identified, CH2MHill suggests that the same comparison would be used.

> The existing average dry weather design flow for the WPCF, as stated in the current NPDES permit is 49 mgd. This is defined as the average day flow calculated from May 1 through October 31. Although stated as an average dry weather capacity, the facility must meet the effluent requirements on a 30-day average flow (monthly basis). Because any 30-day period, including the maximum 30-day flow period (or maximum month flow) during the dry season, must meet the NPDES effluent flow and load requirements stipulated for the average dry season flow, it is prudent to compare the actual dry season maximum month flow (DSMM) to the average dry weather design flow in order to assess treatment capacity. This method was reviewed by DEQ staff and verified as the appropriate method.

When I had talked with Mark Hamlin at DEQ on previous occasions, I was assured that DEQ only looks at output and results and that DEQ does not tell jurisdictions how to calculate capacity. I called Mark Hamlin last Thursday after reading in the draft facilities plan that DEQ staff had said the apples to oranges comparison was the appropriate method to calculate the dry weather capacity. Mark then told me that he had evaluated the MWMC dry weather capacity at 60% in the Fact Sheet and NPDES Wastewater Discharge Permit Evaluation. Furthermore, it is clear in that evaluation that DEQ did not

use the method being proposed by CH2MHill. Instead, DEQ compared the average flow capacity of 49 mgds with the average flows of 28.6 mgds. If DEQ preferred the method being proposed by CH2MHill, why wouldn't they use it themselves? And why would we voluntarily dismiss 29% of our current capacity as unavailable for future needs when DEQ estimates our remaining dry weather capacity at 40%, and says that "Based on the current low flows compared to the design flows, and the lack of effluent violations, no expansion of the facility is needed at this time?

Liquid Effluent Wet Weather Capacity:

Wet weather capacity applies to the facility's capacity from November 1 to April 30. Just as dry weather capacity comes in two design capacities, so does wet weather capacity. One is the average monthly wet weather capacity and the second, and probably the more important one, is peak flow capacity.

The wet weather average monthly flow is similar to dry season average monthly flow. It contains a significant amount of I/I just because it is measured in the wet months, but the plant has sufficient capacity to handle the flow. The Master Plan identifies the average wet weather design capacity at 70 mgds and the average wet weather flow at 41.8 mgds (Table 3-3, page 455). DEQ, in its evaluation in 2002, said the average wet weather flow design is 75 mgds and the current average wet weather flows were 56.4 mgds. The draft facilities plan notes the average wet weather flow to be 52.5 mgds (page 4-13) and the design capacity to be 75 mgds (footnote to Table 5.1.1-1, page 5-3). The draft facilities plan projects that the average wet weather flows in 2025 will be 68.2 mgds – below the 75 mgd design capacity. The Master Plan projected that we had 18 years of remaining average wet weather flow capacity, or capacity until the year 2015. If the design capacity of 75 mgds had been used rather than the 70 mgds, the remaining years of capacity would be further extended.

The critical capacity issue involves peak wet weather flows. We have a serious I/I problem. In January, 2001, CH2MHill and MWMC staff released the Wet Weather Flow Management Plan, which described the problem:

> The treatment plant was designed in the 1970s to provide adequate capacity through 2005. From a base flow and loading standpoint, the treatment plant performs well within its capacity (49 million gallons per day [mgd]) in dry-weather months. However, winter rainfall creates flows to the treatment plant that exceed the plant's peak capacity (175 mgd) on average several times per year and exceed full (secondary) treatment capacity (104 mgd) more frequently...
>
> Peak flow estimates for conditions associated with the 5-year storm event are used to size and plan future system improvements at the treatment plant and in the collection system. Through system modeling, the 5-year peak was estimated at 264 mgd. Peak flows are attributed to high infiltration and inflow (I/I) rates in many areas of the collection system. I/I occurs from extraneous water getting into the system from illegal roof drain connections, sewer pipe cracks, and other

> sources. I/I is often associated with older pipes in the system which have deteriorated. Sanitary pipes in older areas are also more likely to be subject to improper storm drainage (inflow) connections when construction inspection practices were more lenient and / or such connections were allowed, creating a combined flow system. Newer pipe systems reflect improvements in construction techniques, materials, and inspection and typically exhibit far less I/I. In Eugene, 11 percent of the pipes are at least 50 years old. In Springfield, the percentage of pipes at least 50 years old is 15 percent... Because the primary sources of I/I are in the existing system and limited I/I is anticipated from system expansion, growth in the system does not contribute significantly to projected system deficiencies. The 5-year peak is estimated at 298 mfd. Of this peak, only 4 percent or 12 mgd, is estimated to be the result of I/I from future pipes.
>
> Estimates made at the time of design of the treatment plant, relative to the amount of rainfall-derived infiltration and inflow (RDII) that could be cost-effectively removed, were overly optimistic. This has resulted in insufficient capacity to manage peak flows at the treatment plant and has increased the risk of sanitary sewer overflows (SSOs) at a number of locations in the collection system. Example problems include basement and street flooding and discharges to stormwater facilities and receiving waters. Although the magnitude of wet weather flows differs greatly, they are significantly diluted because the source of the majority of the flow is rainwater, not sanitary sewage. Treatment plant flow data indicates that wet weather flow is diluted such that the concentration of typical pollutants in wet weather flow is 50 percent to 60 percent of that in dry weather flow (Executive Summary, page 1465).

The Master Plan also talks of the lack of peak flow capacity.

> Peak flows have approached or exceeded the hydraulic design capacity of the plan in seven instances, but no NPDES permit violations have occurred – mass limits have been suspended in those instances. Flows greater than the peak design capacity have been pumped by relying on redundant, spare pumps. The frequency of peak flow exceedances will increase as the base, average wastewater flow increases. This could potentially lead to NPDES permit violations caused by sanitary sewer overflows or exceedance of effluent quality permit limits.

All of the documents agree that the peak flow design capacity is 175 mgd. Everyone also agrees that under our permit we are required to have enough capacity during the wet weather months to treat the wastewater flow that would occur during a storm event described as "the one-in-five-year, 24-hour duration storm" and that we do not have sufficient capacity to do so.

Effluent Biosolid Loads:

BOD (now often seen as CBOD) and TSS can be measured in either lbs/day or dry tons. In the reports, you will see both used. Sometimes you may wish to compare data from

different reports that are expressed in different measurements (lbs/day or tons/year). To convert lbs / day to dry tons / year, multiply the lbs / day by 0.1825. To convert dry tons per year to lbs / day, multiply by 5.4795.

Under our permit, we are required to remove at least 85% of the monthly average for BOD and TSS. The existing capacity for BOD is 66,000 lbs per day and for TSS is 71,600 lbs per day (Master Plan, page 455; System Development Charge Methodology, page C-1). The Master Plan identifies the average dry weather BOD load as 28,682 lbs/day and that of TSS as 31,056 lbs/day (Table 3-3, page 455). It estimates that there is a remaining life BOD average month capacity in the facility of 40 years and maximum month remaining capacity of 33 years. TSS has a remaining average month capacity of 35 years and a maximum month capacity of 29 years (Table 3-5, page 457).

The Master Plan concludes: "For BOD, the E/SWPCF has substantial remaining capacity to about 2030 as a result of lower than design per capita loadings and historical growth rates (page 462). It also speaks to TSS. "The results of remaining capacity, as measured by TSS, are also substantial, to about 2026 (page 462).

DEQ, in its 2002 Fact Sheet and evaluation discusses the different summer (dry season) and winter (wet season) BOD and TSS permit requirements. It concludes:

> "A review of recent monitoring data indicates the permittees should generally be able to comply with the permit limits. No changes from the previous permit are proposed... An 85 percent removal efficiency limit is included in the proposed permit to comply with federal requirements. An examination of the DMR data indicates the permittee will be able to meet the limit with the current facilities (page 10).

The Draft Facilities Plan indicates that our permit has a Maximum Week TSS permit limit / removal requirements of 28,000 lbs / day and that CBOD has a Maximum Week requirement of 24,000 lbs/day. Actually, the permit does not refer to Maximum Week requirements. The permit chart refers to Monthly Average lbs/day, Weekly Average lbs/day, and Daily Maximum pounds. CH2MHill chose to convert the requirement into Maximum week terms rather than use the measurements provided by DEQ in the permit. The answer would appear to be the same as why we lost all of our dry weather capacity under the System Development Charge Methodology. Rather than using the Monthly Average measurement provided in the permit to compare to the Monthly Average capacity of 49 mgds (apples to apples), the decision was made to convert the data to Maximum Week lb/day and compare that number to the average flow design capacity of 49 mgd (apples to oranges).

> Dry season mass limitations for both CBOD and TSS outlined in the NPDES permit are based on the current dry season flow of 49 mgd. The mass limit requirements must be met for the highest 30-day flow period in the dry season (maximum month basis). Even if the constant concentration limits for CBOD and TSS are met, the mass limits imply a lower concentration requirement if the

> wastewater flows exceed the current dry weather design capacity or if the future dry weather design capacity of the facility is increased. Concentration limits was well as percent removal requirements are also specified in the NPDES permit... Permit removal limits apply; however, they are not a factor during the dry season because the mass and concentration limits are significantly more stringent (page 5-4).

The question arises again. Why measure things differently than DEQ does? DEQ, in the permit, provides three different means to measure the CBOD and TSS in both the dry season and the wet weather seasons. Why convert to a fourth measurement that is not provided by DEQ? Since DEQ refers to the average monthly dry weather design capacity of the facility of 49 mgds and provides a limit for monthly average flow, why not use monthly average flow to arrive at your capacity (apples to apples)? By converting to Maximum Week, I/I is again included in the flow but not in the design capacity, which is automatically going to skewer the measurement and result in a significant loss of facility capacity.

As a result, CH2MHill determined in the System Development Charge Methodology that the facility is now operating at 83% of our BOD capacity and at 90.4% of our TSS capacity. Seven years ago, when CH2MHill prepared the Master Plan, they concluded that we had a great deal of effluent BOD and TSS capacity. "The remaining treatment capacity of the E/SWPCF is substantial for average dry and wet weather flow conditions and conventional pollutants (BOD and TSS) (page 450).

DEQ, as you will recall, placed the capacity used for effluent organic loads at 60%. It also said: "The current permit contains CBOD and TSS removal efficiency limits of 85 percent. The facility has been able to comply with the permit limits and has not had any violations even during the extremely wet months (page 4 of the Fact Sheet and evaluation)." As you recall, DEQ also concluded that our current facilities would allow us to continue to remain in compliance with our permit.

A second decision made by CH2MHill and MWMC staff also affected the amount of BOD and TSS capacity reportedly available. When calculating BOD capacity, for example, CH2MHill used the following formula for the System Development Charge Methodology:

Current BOD = (0.19 x 217,690 x 1.3) + 2,402 = 54,800 lbs/day where

> 0.19 is the selected pounds per capita per day based on dry season values from 1990 to 2002
>
> 217,690 is the population served in 2002
>
> 1.3 is the selected peaking to convert average dry season load to DSMM (dry season maximum month) load (based on 1990 to 2002 data)

The key piece is the selected pounds per capita per day. Per capita loads, according to the Master Plan, have been lower than the design capacity and the Master Plan identified the per capita load for BOD as 0.17. On two different occasions (the last time at the second public forum), Matt Noeson from CH2MHill assured me that the change in the per capita pounds per day from the 0.17 they had used in the Master Plan to the 0.19 being used now was not based upon any new data or any change in how the capacity should be calculated. The change in per capita load was done solely for the purpose of further reducing our chances of having a permit violation during a wet May. However, the effect on the amount of BOD capacity is significant. The used capacity drops to 50,500 lbs per day. Changing the per capita load results in an additional 8.5% loss of BOD capacity.

If we substitute the population figures that are used in the Draft facility plan for those used above, we have the following formula:

(0.19 x 229,145 x 1.3) + 2,402 = 59,000 lbs per day that we are using of our 66,000 lbs/day capacity, we are now using 89.5% of our BOD capacity.

This is the dilemma that we face. According the Master Plan prepared by CH2MHill seven years ago, we were using about 46% of our BOD capacity. According to DEQ, five years later, we are using approximately 60% of our capacity and our current facility would allow us to comply with our new permit requirements. However, according to CH2MHill and MWMC staff in the Draft Facility Plan, the sky is falling. As a ratepayer, I would feel most comfortable going with the more moderate assessment of DEQ and assume that we are using 60% of our BOD and TSS capacities and have 40% available for future use.

The same argument applies to TSS capacity. According the Master Plan, we were using 46% of our TSS capacity seven years ago. According to DEQ in 2002, we were using approximately 60% of our capacity. Using the population numbers in the facility plan and the formula provided by CH2MHill in the System Development Charge Methodology, we are generating the following amount of TSS:

(0.21 x 229,145 x 1.4) + 2,224 = 69,593 lbs/day of TSS. Our capacity is 71,600, so according CH2MHill and MWMC staff, we are currently using 97% of our TSS capacity. As in the BOD calculation, we are now using a different per capita load of .21 rather than the .19 used in the Master Plan.

Why such a large difference. I believe it is the combination in the draft facility plan of comparing dry weather average flow design capacity with maximum rather than average flows and the change in the peaking factor (for calculation dry weather flow, which I did not discuss) and per capita loads for calculating the capacity of BOD and TSS. I don't know what peaking factors and pounds per capita that DEQ used. I do know that they did not compare maximum flows with average flow design capacity to calculate capacity. DEQ seems to have taken the most moderate approach compared to either the Master

Plan or the Draft Facilities Plan and for that reason would appear to be more reliable in their capacity evaluations.

(As an interesting side note. In February of this year, CH2MHill and MWMC staff were actually using larger per capita loads for BOD and TSS - .20 and .22 respectively. If we were to use the February 0.22 pounds per capita and plug it into the TSS formula using the population estimates in the draft facility plan, we would be generating 72,800 lbs per day of TSS, which would actually exceed the design capacity of 71,600. The following month, the pounds per capita for both BOD and TSS were reduced by .01.)

Another indication of the difference in how CH2MHill and MWMC staff are calculating current biosolid loadings is in the tons currently being generated by the facility. In Table C-3 of the Draft System Development Charge Methodology (page C-6), MWMC staff and CH2MHill indicate that we have a current loading of 5,927 tons per year. DEQ, in its 2002 evaluation of the facility, indicated that "The MWMC wastewater treatment facility generated 4,240 dry metric tons during the reporting period January 1, 2000 to December 31, 2000 (page 3)." I have not yet determined if the 5,927 tons of biosolids reported by CH2MHill is in metric tons or not, but even if you convert the DEQ number from metric tons to tons, the numbers aren't close. The mere passage of three years can not explain a 21% or 28% difference between DEQ's and MWMC's numbers.

In short, my concern in the assumptions behind the facilities plan is the dramatic loss of capacity resulting from the new manner in which CH2MHill and MWMC is calculating capacity. To have a facility go from having a great deal of capacity to almost none in seven years is troubling. To indicate that this new method of calculating capacity is sanctioned by DEQ would seem to be unsupported by DEQ's own actions, given that DEQ used the more conventional method of calculating capacity in its 2002 evaluation of the MWMC facilities.

How Much Capacity Do We Need?

Maybe I should change this section to What Should We Build? I just got off the phone with John Gasik, at the Medford DEQ. He told me that he was in the process of reviewing the MWMC facilities plan. Being ignorant of DEQ processes, I asked him why we didn't wait and approve the facilities plan after he had had a chance to review it. He told me that he couldn't really review the plan until the jurisdiction had selected which of the required options it prefers. He said that the community may choose to do something much different.

We talked about a $144 million cost after only 20 years. He told me that the treatment facilities only have a lifetime of about 20 years before you have to start replacing things. That bothers me somewhat because almost all of $144 million is for new capacity. There is some rehabilitation costs, but it is relatively minor. Twenty years from now, are we looking at putting out $300 million to replace the eight secondary clarifiers, etc?

Eugene Planning Commissioner Rusch mentioned at the meeting of the joint planning commissions that he would like to have a discussion about the type of facilities we build. He said that we are using a design that comes from the sixteenth century, but that revolutionary changes have been made in the last twenty years. I mentioned that to John Gasik and he agreed.

If our current plant really is close to the end of its functional life, why are we not considering the new techniques, especially if we are putting out $144 million to basically add similar capacity to a facility that is becoming obsolete? Why are the new sanitary techniques part of the option discussion? $144 million will always seem like a lot of money to me, but if we end up having to shell that out and then a lot more to rehabilitate the current facility, why not have a discussion about the new technology?

(By the way, it was John Gasik who approved of the way the capacity is being calculated after it was explained to him, although he did say that he thought it was to address a technical issue. The impact on the actual capacity was evidently not the issue. I think it needs to be an issue when you are talking about that much capacity.)

Sincerely,

Roxie Cuellar
Director of Government Affairs