GIBBS & OLSON, INC.
since 1950

March 15, 1999

Mr. Chuck Meyer, P.E.
Department of Ecology
P.O. Box 47775
Olympia, WA 98504-7775

Re: City of Woodland General Sewer Plan/Facility Plan
Response Letter to Department of Ecology's Comments on Draft GSP

Dear Mr. Meyer:

This letter is in response to your November 6, 1998, memorandum regarding DOE's comments on the City of Woodland's Draft General Sewer Plan submitted in October 1998.

The draft report has been revised to include the evaluation of alternative liquid and solids treatment processes. The revised report is being submitted for approval as a combined General Sewer Plan/Facility Plan report in accordance with the requirements of WAC 173-240-050, WAC 173-240-060, and applicable federal requirements.

Based on the additional work completed since the draft GSP was submitted, the recommended improvements to the City of Woodland's WWTP consists of a new headworks facility (reutilizing the existing Hycor screening equipment), two new sequencing batch reactors (SBR's) for secondary wastewater treatment (including 100,000 gallons of post equalization volume), two new aerobic digesters with a gravity thickener and a pre-mix basin, UV disinfection, a new laboratory building, modifications to the existing WWTP buildings as required, two new effluent pumps and an upsized gravity effluent pipeline. The recommended improvements are to be constructed at the existing WWTP site that is to be enlarged by approximately 2 acres. Demolition of the existing headworks, primary clarifier, SBC/RBC basins, and the secondary clarifier will also be required as part of the recommended improvements.

Since the SBC process is not the recommended treatment alternative in the revised report many of DOE's concerns regarding SBC's included in the draft report review comments are no longer valid for Woodland's WWTP facility. A copy of your November 6th memo is attached to this letter and our responses will address each comment in chronological order.

The following are responses to Chuck Meyer's comments:

Page I-7 — After further correspondence with you (refer to Appendix K of the revised report), the GSP/FP has been modified to reflect the preliminary determination of eligibility. We understand that final eligibility will be made at the time final plans and specifications are approved by DOE.

Page I-8 — We understand that design is only eligible for loan funding, and that an application for construction funding can be made only after approval of the final design by DOE. The schedule shown on this page has been expanded and presented in more detail to clarify the financial funding of the recommended Phase I improvements.

Page II-2 — The State Environmental Review Process (SERP) checklist has been completed and included in Appendix J following the SEPA Checklist.

1405 17TH AVENUE ■ SUITE 300 ■ P.O. BOX 400 ■ LONGVIEW, WA 98632
PHONE: (360) 425-0891 ■ FAX: (360) 423-3162 ■ E-MAIL: gibsolsn@cport.com

Page V-9 A discussion of the flow contributions estimated for existing and future conditions has been expanded for clarification. This is included in the first and second paragraphs of Page V-9.

Page VII-45 This comment is no longer valid since the recommended alternative is a completely different process than the one now utilized at the Woodland WWTP. All tankage for the recommended alternative will be constructed for maximum efficiency of the particular processes utilized.

Figure VII-5 This figure has been removed from the GSP/FP since the preferred alternative is an SBR system for wastewater treatment and aerobic digestion for solids treatment. The new alternative is shown in Figure VIII-1 of the revised report.

Page VIII-2 (Now IX-2) Paragraph has been corrected.

Page VIII-2 (Now IX-2) Second paragraph has been expanded to clarify information regarding Centennial Fund allowances.

Page IX-1 (Now X-1) Schedule has been changed to show recommended changes regarding funding.

Page VIII-2 (Now IX-2) NEPA has been changed to SERP.

The following are responses to Dave Knight's comments:

No. 1 - We agree that high strength users are consuming a significant portion of the existing plant capacity. Recommendations are made in the report that the City work with the dischargers to make their discharge more compatible with Woodland's WWTP and monitor the dischargers. Based on the monitoring the City should charge high dischargers through enforcement of the current sewer billing ordinance. If the City does not receive cooperation, then it is also recommended that the City work with DOE to develop a pretreatment program and strongly enforce it with DOE's assistance.

No. 2 - We agree that more first stage capacity could be generated if the SBC and the RBCs are operated in parallel. Since installation of the SBC in 1993 the City has had the ability to operate the units in parallel. Up to this point they have chosen not to do this and have still produced a final effluent with less than 30 mg/l of both TSS and BOD_5. This performance of the plant, as it is currently operated, is the best possible demonstration that the existing plant is not overloaded in terms of BOD_5. The analysis in the revised report shows the existing plant is nearing its actual capacity. Therefore, if the influent waste load increases significantly between now and when the recommended improvements are constructed, the City should consider operating the SBC and RBC units in parallel to take advantage of the additional first stage capacity. Overall SBC/RBC system capacity will not increase, however, if operation is changed from series to parallel.

No. 3 - The draft GSP acknowledged that providing additional plant capacity through construction of additional SBC's (and clarifiers) may not prove to be the most cost-effective alternative. The preliminary recommendation was included in the draft report to provide an estimate of the relative magnitude of costs to construct the required capacity. It is important to note, however, that DOE's concern with utilizing the SBC treatment process appears unwarranted based on the performance of the existing Woodland WWTP. Further research into the past performance of SBC/RBC technology indicates there are over 1,800 operating SBC/RBC WWTP's throughout the world and that the failure rate of the shafts and media has been less than 5%.

The majority of the failures were in the early 1970's when the technology was being developed. Furthermore, plant operators at nearly all of the well designed plants indicate that the plants are very easy to operate and maintain thereby reducing the amount of manpower required and utilize low amounts of energy. SBC's and RBCs are like any other treatment process in that if they are not properly designed and/or operated, they will not perform in an optimum manner. The Puyallup WWTP is currently undergoing a change in process from RBCs to activated sludge and is increasing operations staff from 7 operators for the old RBC plant to 17 operators for the new activated sludge plant. This type of manpower increase is a large annual cost for a small to mid-sized community to incur.

Concerning utilizing UV disinfection on effluent from the SBC/RBC process the City of Winlock recently installed a Trojan open channel UV system to disinfect RBC effluent and is reporting 0 fecal coliform counts and has experienced no problems to this point. In addition, samples of Woodland's effluent were taken and tested by Trojan to determine UV transmissivity. All unfiltered samples had a UV transmissivity of at least 64% (90th percentile value was 67%). With transmissivity in this range there would be no need to filter the effluent prior to disinfection with UV light.

No. 4 - Again, the draft GSP was submitted with the preliminary recommendation included to show a magnitude of estimated costs. The revised report includes a comparison of costs for an SBC plant with anaerobic digestion and an SBR plant with aerobic digestion. Costs for modifying the dike at the existing plant site are included in the Site Work line item of the alternative plant cost estimates. The cost to construct the proposed treatment plant at an alternative site would not be significantly less than to construct it at the existing site. The only real cost difference would be that existing treatment units would not need to be demolished for plant construction. The capital cost to convey the wastewater to an alternate site has been estimated at $6.8-8.75 million (including land acquisition) as described in Section VII of the report. The cost for purchasing additional land at the existing site is included in the cost estimates.

No. 5 - With publication of the revised *"Criteria for Sewage Works Design"* (Orange Book) by DOE in January 1999, the 1986 DOE design criteria is no longer valid. The new Orange Book does not include any specific recommended loading rates for SBC/RBC units. The loading rates utilized in the revised report are based on nationally recognized design references and on well-established manufacturer recommendations. There is no widely recognized design procedure for sizing SBC/RBC equipment which utilizes peak hour organic loading rates. We do not understand why DOE required a peak hour organic loading analysis for SBC/RBC units in the past when it has not been required for other treatment processes. Standard design procedures require adequate hydraulic capacity to handle peak hour flows but treatment process equipment is not typically sized to handle a peak hour loading rate. This is a mute point for this application however since the SBC alternative is not the recommended alternative.

No. 6 - The ammonia reasonable potential to exceed evaluation has been revised. The analysis utilized all of the available pH data from DOE ambient monitoring data for the Lewis River at County Road 16. The maximum pH value, which is greater than the 95 percentile value, was used in the analysis. The ammonia criteria spreadsheet has been revised to indicate the presence of salmonids in the Lewis River. Results of the revised analysis still indicate no reasonable potential to exceed ammonia during existing or future conditions.

No. 7 - The locations of all existing domestic and/or industrial wastewater facilities are identified on Page IV-18 of the revised report. Since the late 1970's or early 1980's there has been an agreement between Cowlitz County, Clark County and the City of Woodland controlling growth in the area. That agreement restricted all future growth to within the Urban Growth Planning Boundary while maintaining all lands outside the boundary for forest land and agricultural use. Please refer to page IV-1 through IV-5 of the revised report.

No. 8 - The SEPA Checklist is included in Appendix J of the revised report.

Mr. Knight's specific comments A through O on the draft GSP went into greater detail on the general concerns regarding high strength dischargers, SBC process loading rates and operational issues, additional evaluation of the SBR or conventional activated sludge treatment alternative, and water quality analysis. Specific responses to these comments are not included in this letter since we believe these concerns have been addressed in the responses to Mr. Knight's general comments above and in the new information in the revised report including the recommendation to design and construct an SBR treatment process.

GMA Considerations Comment - Please see the response to comment No. 7 above.

Much of the wetlands shown in Figure IV-5 do not lie within the City's Urban Growth Boundary. Figure IV-5 was taken from the City's 1995 Comprehensive Plan and is a map showing potential wetland areas based on assumptions. Actual wetland locations can only be determined through field work and delineation utilizing federal and state guidelines. To protect wetland areas the City of Woodland has adopted a Critical Areas Ordinance with review procedures for proposed developments. In addition, the City's Comprehensive Plan states: "*The city's wetlands program includes provisions for acquisition of certain high value wetlands, restoration of degraded wetlands, public education about wetlands value and management, use of innovative land use techniques to minimize impacts of development, and control density around key wetlands. Others include scenic and recreational, agricultural, and water supply recharge.*"

We believe the above information coupled with the revised GSP/FP report provides DOE with sufficient responses to the draft GSP review comments. Both the City of Woodland and Gibbs & Olson look forward to receiving DOE's approval of the submitted GSP/FP report in the near future. If you have questions regarding any of our responses or information contained in the GSP/FP report please call either myself or Dick Riley at (360) 425-0991, or Rob VanderZanden at (360) 225-7999. Thank you.

Sincerely,
GIBBS & OLSON, INC.

By Richard A. Gushman
Richard A. Gushman, P.E.

cc: Dave Knight, DOE-SWRO
Rob VanderZanden, City of Woodland

RG\pe
File: 876.44
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GIBBS & OLSON, INC.
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1405 - 17th Avenue, Suite 300 P.O. Box 400
Longview, Washington 98632
Fax 360/423-3162 Phone 360/425-0991

Memorandum

DATE: December 4, 1998

TO: Chuck Meyer, Department of Ecology

FROM: John Diamant, Gibbs & Olson, Inc. JD

RE: Grant eligibility review of proposed laboratory and laboratory equipment.

File: 876.4400.10

During our meeting with the City of Woodland to review the draft GSP, the City indicated that rather than spend the money identified for improving the storage/maintenance building, they would prefer the money be utilized to construct a larger laboratory facility. After further review, we agree that the WWTP upgrade will require a larger laboratory building, and capacity for additional laboratory resources. The existing laboratory is not adequate for the following reasons:

1. The laboratory will need a larger air vent, vent hood, more bench space, incubator capacity and chemical storage space to accommodate additional sampling for anticipated permit requirements.
2. More wall space, and an electrical overhaul is needed to locate any online metering of the WWTP's processes. This may include: flow meter, any controls, pH, temperature, ammonia, etc.
3. A laboratory computer is required to keep all WWTP records. This should include a computer, printer, modem, and database back-up package kept in the main office area of the laboratory. Records will be kept in the computer database.
4. There is no restroom in the existing laboratory, which is a requirement for a healthy work place environment.
5. A changing room, and storage/locker space is not available in the existing laboratory; and operators, have been forced to use alternative methods for storing their belongings.
6. An emergency safety shower, and eyewash is a requirement for laboratory safety, in case of a chemical spill. A sprinkler system is also required for laboratory safety, in case of a fire. These safety features currently are not in place.
7. The laboratory will need space to accommodate resources to conduct alkalinity and volatile acid testing if anaerobic digestion is selected as the solids treatment method.

We recommend that the costs for this improvement be deemed as grant eligible by DOE since it will enable the City to meet all current DOE and OSHA requirements. The preliminary cost estimate of such a facility is $134,000. The existing laboratory building/trailer can be used as a maintenance shop for the WTTP.

Please let me, Rich Gushman, or Dick Riley know if you have any questions. You may reach us at 360/425-0991. Thank you.

City of Woodland - General Sewer Plan/Facility Plan
Laboratory Facility Cost Estimate Spreadsheet
Prepared by Gibbs & Olson, Inc.

Proposed Building Dimensions	20' x 30'
Proposed Building Area (sq. ft.)	600

Laboratory Building Cost Estimate				
Item	Unit	No. Units	Cost/Unit	Cost for Item
Building	sq. ft.	600	$100	$42,000
Emergency Shower/Eye Wash	L.S.	1	$1,000	$1,000
Plumbing	L.S.	1	$5,000	$5,000
Lab Cabinets/Bench	L.S.	1	$10,000	$10,000
Electrical/HVAC	L.S.	1	$15,000	$15,000
Subtotal of Construction Costs				$73,000
Contingency @ 10%				$7,300
Subtotal				$80,300
Sales Tax @ 7.5%				$6,023
Engr/Admin/Legal/Survey/CM&I @ 30%				$24,090
Total Estimated Lab Building Cost				$110,413

Laboratory Building Equipment & Accessories Cost Estimate				
Item	Unit	No. Units	Cost/Unit	Cost for Item
Furniture	L.S.	1	$2,200	$2,200
Computer System/Fax	L.S.	1	$4,400	$4,400
TSS Explosion Proof Vacuum Pump (Nurnberg #209-940)	L.S.	1	$3,900	$3,900
Labconco Fume Hood (Nurnberg #997-888)	L.S.	1	$7,700	$7,700
Hach DR4000 Spectrophotometer	L.S.	1	$4,400	$4,400
BOD Incubator (Nurnberg #223-255)	L.S.	1	$7,100	$7,100
Distillation (Hach)	L.S.	1	$1,700	$1,700
Labconco BOD Washing Machine (Nurnberg #367-201)	L.S.	1	$600	$600
Subtotal of Construction Costs				$21,500
Sales Tax @ 7.5%				$1,613
Total Estimated Equipment Cost				$23,113

Total Cost Est. - Complete Up-To-Date Laboratory Facility				$133,525

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

Post-it® Fax Note 7671	Date 12/9/98	# of pages ▶ 2
To Dick Riley	From Chuck Meyer	
Co./Dept. Gibbs and Olson	Co. Ecology	
Phone # 360-425-0991	Phone # 360-407-6318	
Fax # 360-423-3162	Fax #	

Mr. Richard D. Riley, President
Gibbs and Olson, Inc.
1405 17th Avenue, Suite 300
P.O. Box 400
Longview, WA 98632

Dear Mr. Riley:

Re: Eligibility of Woodland Wastewater Treatment Facility Improvements

Following a review of your November 25, 1998 letter, I generally agree with you on eligibility of the treatment facility upgrades. One difference is on the existing biological treatment capacity. The existing facility would likely be in violation if the SBC went down for any length of time. Accordingly, I consider parallel treatment capability for existing flows to be eligible for grant funding. Comments on individual items are as follows:

1. Mobilization/demobilization - proportional to grant/loan eligibility.
2. Site work - proportional to grant/loan eligibility.
3. Upgrade grit removal equipment - loan eligible.
4. Construct new primary clarifier - grant eligible due to redundancy.
5. Construct new SBC units - grant eligible due to redundancy.
6. Construct new secondary clarifier - grant eligible due to redundancy.
7. Construct new UV disinfection system - grant eligible if present disinfection system is violating water quality standards. Otherwise loan eligible since it is for growth.
8. Construct new solids thickening system - grant eligible if existing solids handling system does not meet state and federal regulations. Otherwise loan eligible since it is for growth.
9. Construct new anaerobic digestion system - same as #8.
10. Construct new laboratory building – grant eligible.
11. Yard piping, fittings, valves and accessories - proportional to grant/loan eligibility.
12. Upgrade effluent pumps - grant eligible due to redundancy.
13. Modify existing control building - proportional to grant/loan eligibility.
14. Electrical, instrumentation and controls - proportional to grant/loan eligibility.

Capacities of the above grant eligible items are limited to the flow that exists at the time a Step 3 funding application is submitted to the Department of Ecology, in accordance with the capacity limits for residential, commercial, industrial, and institutional flows in effect at that time.

One additional item you may wish to consider: land purchase is presently eligible for a Centennial Clean Water loan. It remains so in the new guidelines.

We do differ with respect to eligibility of the pump station upgrades. In reviewing page VI-8 of the General Sewer Plan, upgrading pump stations 3 and 4, I come to the conclusion that only installation of variable speed drives would be grant eligible. The stations appear to be adequate for existing flows and

have already been provided with alarms and a new portable generator. It appears all the upgrades would be loan eligible, with the possible exception of alarms. An upgrade to on-site power generation should be loan eligible as the portable generator is still needed at smaller pump stations.

Should you have any questions regarding the above, call me at (360) 407-6318.

Sincerely,

Charles A. Meyer

Charles A. Meyer, P.E.
Water Quality Program
Southwest Regional Office

CM:le(3/wq)

cc: Rob VanderZandan, P.E., City of Woodland
Karen Beatty, Ecology HQ
David Knight, Ecology SWRO

GIBBS & OLSON, INC.
since 1950

November 25, 1998

Mr. Chuck Meyer, P.E.
Washington State Department of Ecology
Southwest Regional Office
P. O. Box 47775
Olympia, WA 98504-7775

Dear Mr. Meyer:

Please find attached a draft of the cost estimate for Woodland's Wastewater Treatment Plant (WWTP) upgrade and a cost estimate for upgrading the Cities two main pump stations (Pump Station No. 3 and No. 4)

The primary purpose of this letter and the attached spreadsheets is to identify which costs may be eligible for DOE grant funding (if there happens to be grant funding available). After grant eligibility has been determined we can then develop funding packages for the General Sewer Plan (GSP) which consider a "best case" (with a grant) and a "worst case" (without a grant) funding scenario.

Based on my experience I believe the costs for the primary clarifier, the secondary clarifier and the effluent pumps are eligible because they are needed to meet reliability requirements. The U.V. disinfection system is eligible because it's needed to meet water quality standards in the river. The solids thickening and anaerobic digesters are eligible because they are needed to meet the state and federal solids treatment regulations and the site work is eligible because it is needed before the digesters and solids thickening systems can be constructed. I have also identified about 23% of the cost of the new S.B.C's. as eligible because that is the existing BOD treatment capacity of the existing R.B.C.'s which will be demolished to make room for the new S.B.C.'s.

WWTP items. I identified as ineligible include the additional grit removal equipment, 77% of the SBC cost and the new shop/maintenance building.

Based on this analysis the eligible cost items total $2,580,200 (76%) and the ineligible cost items total $824,800 (24%). The cost of the remaining items (mobilization/demobilization; yard piping, fittings valves and accessories; control building and electrical, instrumentation and controls) were then prorated based on the 76%/24% eligible/ineligible distribution. All other costs and contingencies were also distributed between grant eligible and ineligible costs except for design which is loan eligible only.

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For pump stations 3 and 4, grant eligible costs were identified as the costs for the variable frequency drives, the standby generators and the electrical/control buildings for each pump station. The forcemain costs were also identified as grant eligible. I have attached the cost estimate from Appendix G of the Draft General Sewer Plan for your use. Other construction costs were identified as ineligible and then the contingencies were distributed between the two categories.

I would appreciate your response to this analysis so that an eligibility determination can be made and the "best case" / worst case" funding scenarios developed.

Please call me at 360/425-0991 after you have had an opportunity to review this information.

Sincerely,

GIBBS & OLSON, INC.

By

Richard D. Riley, President

RDR/bjs

cc: Rob VanderZanden
Rich Gushman
876-4400-10

CITY OF WOODLAND WWTP UPGRADE
PRELIMINARY COST ESTIMATE
ENTIRE PLANT COST ESTIMATE SUMMARY
G&0 PROJECT NO. 876.44
GSP Estimate Prepared October 28, 1998; Revised 11/24/98

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT	DOE LOAN ELIGIBLE	DOE GRANT ELIGIBLE
1	Mobilization/Demobilization	1 L.S.	$ 235,000	$ 235,000	$ 56,400	$ 178,600
2	Site Work	1 L.S.	$ 150,000	$ 150,000	$ -	$ 150,000
3	Upgrade Grit Removal Equipment	1 L.S.	$ 50,000	$ 50,000	$ 50,000	$ -
4	Construct New Primary Clarifier	1 L.S.	$ 420,000	$ 420,000	$ -	$ 420,000
5	Construct New S.B.C. Units	2 L.S.	$ 455,000	$ 910,000	$ 699,800	$ 210,200
6	Construct New Secondary Clarifier	1 L.S.	$ 450,000	$ 450,000	$ -	$ 450,000
7	Construct New U.V. Disinfection System	1 L.S.	$ 150,000	$ 150,000	$ -	$ 150,000
8	Construct New Solids Thickening System	1 L.S.	$ 100,000	$ 100,000	$ -	$ 100,000
9	Construct New Anaerobic Digestion System	1 L.S.	$ 1,070,000	$ 1,070,000	$ -	$ 1,070,000
10	Construct New Shop/Maintenance Building	1 L.S.	$ 75,000	$ 75,000	$ 75,000	$ -
11	Yard Piping, Fittings, Valves & Accessories	1 L.S.	$ 250,000	$ 250,000	$ 60,000	$ 190,000
12	Upgrade Effluent Pumps	1 L.S.	$ 30,000	$ 30,000	$ -	$ 30,000
13	Modify Existing Control Building	1 L.S.	$ 30,000	$ 30,000	$ 7,200	$ 22,800
14	Electrical/Instrumentation & Controls	1 L.S.	$ 220,000	$ 220,000	$ 52,800	$ 167,200
	Subtotal			$ 4,140,000	$ 1,001,200	$ 3,138,800
	Construction Contingency @ 15%			$ 621,000	$ 150,180	$ 470,820
	Estimated Construction Cost Subtotal			$ 4,761,000	$ 1,151,380	$ 3,609,620
	Estimated Design & Survey @ 8.1%			385,600	$ 385,600	$ -
	Admin., Legal & Const. Phase Eng. @ 21.9 %			$ 1,042,700	$ 312,810	$ 729,890
	State Sales Tax @ 7.5% (Const. Cost Subtotal)			$ 357,100	$ 86,400	$ 270,700
	Preliminary Engineering Costs			$ 80,000	$ 80,000	$ -
	TOTAL ESTIMATED PROJECT COST			$ 6,626,400	$ 2,016,190	$ 4,610,210

CITY OF WOODLAND PUMP STATION AND FORCEMAIN UPGRADE
PRELIMINARY COST ESTIMATE
G&0 PROJECT NO. 876.44
GSP Estimate Prepared October 28, 1998; Revised 11/24/98

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT	DOE LOAN ELIGIBLE	DOE GRANT ELIGIBLE
1	PUMP STATION NO. 4	1 L.S.	$ 130,000	$ 130,000	$ 30,000	$ 100,000
2	PUMP STATION NO. 3	1 L.S.	$ 135,000	$ 135,000	$ 30,000	$ 105,000
3	PHASE 1 FORCEMAIN UPGRADE	1 L.S.	$ 23,950	$ 23,950	$ -	$ 23,950
	Subtotal			$288,950	$60,000	$228,950
	Construction Contingency @ 35%			$101,133	$21,000	$80,133
	Estimated Construction Cost Subtotal			$390,083	$81,000	$309,083
	Estimated Design & Survey @ 11.41%			$44,500	$44,500	$0
	Admin., Legal & Const. Phase Eng. @ 23.59 %			$92,029	$27,609	$64,420
	State Sales Tax @ 7.5% (Const. Cost Subtotal)			$29,300	$6,100	$23,200
	TOTAL ESTIMATED PROJECT COST			$555,911	$159,209	$396,703