



Parametrix, Inc.

Sumner Bellevue Bremerton Portland

STANDARD AGREEMENT FOR PROFESSIONAL SERVICES

Page 1 of 2

PARAMETRIX OFFICE ADDRESS 7820 NE Holman, Suite B-6, Portland, Oregon
PROJECT NAME Outfall Mixing Zone Evaluation PROJECT NUMBER _____
CLIENT City of Newberg
ADDRESS 414 East First Street
Newberg, Oregon 97132

SUBJECT TO THE TERMS of this agreement, Parametrix, Inc. shall perform the following services: _____
Exhibit "A" attached

COMPENSATION by the CLIENT to Parametrix, Inc. to be on the basis of time and materials, as detailed in
Exhibit "B" attached. Task budgets shall not be exceeded without the approval
of the City of Newberg.

When compensation is on a cost-reimbursable basis, a service charge of 15 percent will be added to Direct Expenses. All sales, use, value added, business transfer, gross receipts, or other similar taxes will be added to ENGINEER's compensation when invoicing CLIENT.

OTHER TERMS (including time for performance or completion of the work) a) Notice to Proceed will be on a
schedule and task basis by the City of Newberg.
b) Parametrix will have no contractual relationship with Smurfit Newsprint, Inc.
(Provision 12, following) Payment for Schedule II Services (Smurfit) shall be
an obligation of the City of Newberg.

Services covered by this Agreement will be performed in accordance with the PROVISIONS stated on Page 2 of this form and any attachments or schedules. This Agreement supersedes all prior agreements and understandings with respect to the work contemplated under this agreement and may only be changed by written amendment executed by both parties.

Approved for CLIENT

By Thane R. Cole

Title City Manager

Date August 6, 1993

Accepted for PARAMETRIX, INC.

By [Signature]

Title Branch Manager

Date 7/4/93

1. Authorization to Proceed

Execution of this Agreement by the CLIENT will be authorization for Parametrix, Inc. to proceed with the work, unless otherwise provided for in this Agreement.

2. Salary Costs

Parametrix Salary Costs, when the basis of compensation, are the amount of wages or salaries paid Parametrix, Inc. employees for work directly performed on CLIENT's Project plus a percentage applied to all such wages or salaries to cover all payroll-related taxes, payments, premiums, and benefits.

3. Per Diem Rates

Parametrix Per Diem Rates, when the basis of compensation, are those hourly or daily rates charged for work performed on CLIENT's Project by Parametrix, employees of the indicated classifications. These rates are subject to annual calendar year adjustments; include all allowances for salary, overheads and fee; but do not include allowances for Direct Expenses.

4. Direct Expenses

Parametrix's Direct Expenses, when part of the basis of compensation, are those costs incurred on or directly for the CLIENT's Project, including, but not limited to, necessary transportation costs, including current rates for Parametrix vehicles; meals and lodging; laboratory tests and analyses; computer services; word processing services; telephone, printing, binding and reproduction charges; all costs associated with outside consultants, and other outside services and facilities; and other similar costs. Reimbursement for Direct Expenses will be on the basis of actual charges when furnished by commercial sources and on the basis of current rates when furnished by Parametrix, Inc.

5. Payment to Parametrix, Inc.

Monthly invoices will be issued by Parametrix for all work performed under this Agreement. Invoices are due and payable on receipt. Interest at the rate of 1½% per month, or the maximum permitted by law if lesser, will be charged on all past-due amounts starting 30 days after date of invoice. Payments will first be credited to interest and then to principal.

6. Standard of Care

The standard of care applicable to Parametrix, Inc.'s services will be the degree of skill and diligence normally employed by professional engineers or consultants performing the same or similar services.

7. Termination

This Agreement may be terminated for convenience by either party on 30 days' written notice; or for cause, if either party fails to substantially perform the work in accordance with this Agreement through no fault of the other and does not commence correction of such work and nonperformance within 5 days of written notice and diligently complete the correction thereafter. On termination, Parametrix will be paid for all authorized work performed up to the termination date plus termination expenses, such as but not limited to, reassignment of personnel, subcontract termination costs, and related closeout costs.

8. Cost Opinions

Any cost opinions or Project economic evaluations provided by Parametrix, Inc. will be on a basis of experience and judgment, but, since it has no control over market conditions or bidding procedures, Parametrix, Inc. cannot warrant that bids, ultimate construction cost, or Project economics will not vary from these opinions; and client waives any claim for the accuracy or inaccuracy of such opinions.

9. Limitation of Liability

Notwithstanding any other provisions of this agreement, Parametrix's liability for CLIENT's damages will not exceed the compensation received by Parametrix under this Agreement.

10. Severability and Survival

If any of the provisions contained in this Agreement are held illegal, invalid or unenforceable, the enforceability of the remaining provisions shall not be impaired thereby. The limitations of liability and indemnities will apply regardless whether Parametrix' liability arises under applicable statute or case or common law, including without limitation by reason of enumeration herein, negligence, strict liability or any other type of cause of action, and shall apply to Parametrix, its officers, and employees.

The law of the state, or province, of Oregon shall govern the validity of this Agreement, its interpretation and performance, and any other claims related to it; venue of any lawsuit shall be in Oregon.

11. Asbestos or Hazardous Substances

To the maximum extent permitted by law, the CLIENT will indemnify and defend Parametrix and its officers, employees, subconsultants, and agents from all claims, damages, losses, and expenses, including, but not limited to, direct, indirect, or consequential damages and attorney's fees arising out of or relating to the presence, discharge, release, or escape of hazardous substances, contaminants, or asbestos on or from the Project.

12. No Third Party Beneficiaries

This Agreement gives no rights or benefits to anyone other than the CLIENT and Parametrix, Inc. and has no third party beneficiaries.

Parametrix's services are defined solely by this Agreement, and not by any other contract or agreement that may be associated with the Project.

13. Insurance

Parametrix shall maintain public liability and property damage insurance which shall protect Parametrix from personal injury or property damage claims arising from its negligent performance of work under this Agreement. The limits of liability for such insurance shall be \$1,000,000 combined single limit.

14. Disputes

In the event of any dispute arising out of this agreement, the parties agree to submit the dispute to non-binding mediation and binding arbitration under the then prevailing rules of the American Arbitration Association (AAA) for construction industry disputes, provided that no party objects to arbitration within 30 days after a demand for arbitration is filed with AAA. In any action brought for such dispute, the prevailing party shall be entitled to recover its reasonable costs and attorney fees.

Exhibit A
Scope of Services

General

The City of Newberg and Smurfit Newsprint, Inc., wish to complete a combined outfall mixing zone evaluation using the fluorescent dye study method outlined in the Parametrix proposal of May 19, 1993. Services to be provided are as follows:

Schedule I City of Newberg

- | | |
|---------------|--|
| <i>Task 1</i> | <i>Outfall Mixing Zone Evaluation (one outfall)</i> |
| <i>Task 2</i> | <i>Bioassay Study</i> |
| <i>Task 3</i> | <i>Industrial Pretreatment Local Limits Evaluation</i> |

Schedule II Smurfit Newsprint, Inc.

- | | |
|---------------|--|
| <i>Task 1</i> | <i>Outfall Mixing Zone Evaluation (1 outfall)</i>
<i>(Smurfit results will be included in the Newberg report - one combined report will be prepared.)</i> |
|---------------|--|

Task 1 Outfall Mixing Zone Evaluation

A. Mobilization for Fluorescent Dye Study

Objectives

- To mobilize for conducting a comprehensive fluorescent dye study during the August/September low flow season in the Willamette River.

Methods/Approach

- Upon notice to proceed from the City of Newberg, the study team will mobilize for conducting field studies for the level of effort required. We request two weeks notification in order to purchase supplies, prepare equipment and schedule equipment for the day of the field study.

Guidance for field and laboratory procedures are from the following documents:

- *Measurement of Time of Travel and Dispersion in Streams* by Dye Tracing, Book 3, Chapter A9, Techniques of Water-Resources Investigations, 1982.
- *Fluorometric Procedures for Dye Tracing*, Book 3, Chapter A12, Techniques of Water-Resources Investigations, 1986.
- *Fluorometric Facts*, Monographs of Dye Tracing Procedures, Sunnyvale, California, 1991.

B. Fluorescent Dye Study

Objective

- To conduct a fluorescent dye study during annual low river flows for the City of Newberg's 24-inch outfall and the nearby main Smurfit outfall into the Willamette River.

Methods/Approach

Our approach to conducting a comprehensive fluorescent dye study will be to measure in-situ effluent concentrations using a Turner Model 10-AU digital fluorometer within and around the mixing zone and at the boundary of the ZID. Specifics are detailed below:

Plant Flows – We will attempt to conduct the field study as near to average dry weather plant design flows as possible. Plant hydraulics will be investigated to determine whether increasing flows to 4 mgd is feasible. If not feasible, the study will take place at normal dry weather flows and extrapolated to average dry weather design flows using mathematical models.

Navigation – The working platform for water sampling within and around the dilution zone will be a 17-foot Boston Whaler. Approximate vessel position from the outfall will be determined by measuring the distance along a metered rope tied to an anchor placed next to the outfall. True vessel position will be determined by land based surveyor. Sample positioning is accurate to ± 3 feet.

Dye Injection – Rhodamine WT fluorescent dye will be used as the tracer. The Rhodamine dye solution will be metered into the effluent with a constant displacement pump. Dye quantities will be precisely measured so that discoloration of the Willamette River will be kept to the minimum necessary for detection over the range of dilutions anticipated. No health or harmful effects are associated with the concentrations of dye to be used (Turner Designs, 1991).

Dye will be injected into the chlorine contact chamber. Final effluent will be sampled at Manhole #1 on the river bank to accurately verify final effluent dye concentrations prior to discharge into the Willamette River. The effect of chlorine residual, ammonia, and other effluent chemical constituents on dye concentration (known as quenching) is expected to be minimal.

Sampling – A Turner Model 10-AU digital fluorometer will be used to record plume effluent dye concentrations. An advancement over its predecessor, the Turner Model 10-AU can continuously record temperature compensated dye concentrations at a specified sampling interval. We intend to run five or more continuous transects through the effluent plume with a five-second sampling interval. Samples will be taken both horizontally from plume fringe to shore and vertically from river surface to bottom. Real-time fluorometer readings will aid in positioning the survey vessel. Sampling will be intensified at locations of the plume centerline, or where the dilution factor is lowest, and thus more critical.

Currents – Currents at the outfall location will be measured with surface drogues. Current measurement will assist in calibrating the computer model for subsequent extrapolation to higher plant flows or higher river flows if 7Q10 conditions in the Willamette are not observed.

Laboratory Analysis – Both before and after the one-day summer field study the fluorometer will be calibrated to established Rhodamine WT dye solution standards. Several bottled samples will be taken during the dye study and later analyzed in the lab as a further check on fluorometer calibration. Using our sampling and sample verification methods, better than 98 percent accuracy can be expected in measured dilution factors.

C. Diver Sampling

Objectives

- To locate and mark the end of the outfall with a buoy.
- To sample the effluent plume within and around the ZID (0-30 feet from the outfall).
- To verify diffuser function by visual observation of the effluent plume.
- To include diver collected sample results in the Final Report.
- To apply measured dilutions to effluent and receiving water toxicant data to determine compliance with acute water quality standards.

Methods/Approach

Two certified and insured divers will mark the end of the outfall with a buoy prior to the dye study to aid in vessel navigation. During dye injection the divers will sample the effluent plume in and around the ZID (0-30 feet from the outfall). This will be accomplished by measuring fixed radial distances from the discharge port as marked by knots in a rope which will be attached to the outfall. Anticipated sample stations are 5, 10, 15 and 20 feet from the outfall in the plume centerline. Repeat samples will be taken. Outfall integrity will be visually checked during the study by visual observation of the tinted effluent plume.

Following the field study, diver collected samples will be analyzed in the laboratory to determine effluent concentrations and compute dilution factors. Dilution vs distance curves will be drawn. Measured dilution factors will be applied to effluent and receiving water toxicant data to determine compliance with water quality standards.

Products

Diver collected sample results will be presented in the final report.

D. *Final Report/Mixing Zone Evaluation*

Objectives

- To characterize the zone of initial dilution (near field) and the mixing zone boundary (far field) at critical low flow river flows and average dry weather wastewater treatment plant flows.
- To express in terms of dilution factors the dilution within the mixing zone, its boundaries, and at the edge of the zone of initial dilution.
- To evaluate the ability of the discharge to comply with water quality standards for total chlorine residual and other toxicants (i.e., ammonia and metals).
- To calibrate the hydraulic mathematical model with the detailed dye study.

Methods/Approach/Product

The final report to the City of Newberg will be similar to those provided as examples for Portland, Gresham and Montesano. The final report will include a study plan and schedule for complying with the water quality standards for chlorine residual. However, the study plan will not include pre-design of facilities required to comply with these requirements.

Following dye testing, a water quality analysis will be conducted. Discharge monitoring reports (DMRs) from the plant will be required as well as all available toxicant scans. The foremost toxicant of concern is chlorine. At the City's request we will derive chlorine permit limits using the procedure described in the *Technical Support Document for Water Quality Based Toxics Control* (EPA, March 1991).

Toxicants scans will also be obtained from the Smurfit Newsprint, Inc. outfall to determine whether common toxicants are present and whether synergistic effects are likely.

An evaluation of Newberg's and Smurfit's existing defined mixing zones will be made to determine if mixing zone size increase is

appropriate. According to the EPA, mixing zones should reflect the hydrodynamics of the discharge.

Schedule

Task 1 shall be completed by October 15, 1993.

Task 2 Bioassay Studies

Parametrix will conduct bioassay as detailed in Schedule D of the City of Newberg's current NPDES Permit. Four quarterly effluent samples will be studied for the three specified organisms. Parametrix will supply a cooler and sample bottles. City staff shall collect the samples and ship the cooler to the Parametrix Bioassay Laboratory.

Task 3 Industrial Pretreatment Local Limits Evaluation

A technical evaluation of the need to revise local limits shall be performed in accordance with Paragraph 4 of Schedule E of the City of Newberg's current NPDES Permit. A more detailed scope of services will be developed for this work as part of Schedule I, Task 1.

Exhibit B
Compensation

Schedule I City of Newberg

Task 1	Outfall Mixing Zone Evaluation	\$14,080
Task 2	Bioassay Studies (4 @ \$2,900 each)	\$11,600
Task 3	Industrial Pretreatment Local Limits Evaluation	To be determined

Schedule II Smurfit Newsprint, Inc.

Task 1	Outfall Mixing Zone Evaluation (main outfall only)	\$14,470
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Task budgets shall not be exceeded without the approval of the City of Newberg

Terry -
This is the contract
for the Mixing Zone
study approved by
Council July 6.
Please sign and return
to me. Terry

Parametrix, Inc.



To:

Larry Anderson, PE, PLS
Cty of Newberg
414 East First
Newberg OR, 97132

Date:

7/9/93

Project No:

87-2253-02

From:

Washington

☐ 5700 Kitsap Way
Suite 202
Bremerton, WA 98312-2234
206-377-0014
206-383-1835
Fax: 206-479-5961

☐ 1231 Fryar Avenue
P.O. Box 460
Sumner, WA 98390-1516
206-863-5128
206-838-9810
Fax: 206-863-0946

☐ 5808 Lake Washington Blvd. N.E.
Kirkland, WA 98033-7350
206-822-8880
Fax: 206-889-8808

☐ 25 N. Wenatchee Avenue
Suite 207
Wenatchee, WA 98801-2236
509-664-3290
Fax: 509-663-8816

Oregon

☒ 7820 N.E. Holman
Suite B-6
Portland, OR 97218-2859
503-256-5444
206-694-5020
Fax: 503-256-4221

Hawaii

☐ 1164 Bishop Street
Suite 1600
Honolulu, HI 96813-2832
808-524-0594
Fax: 808-523-2995

We are transmitting the following materials:

2 copies each of revised
schedules A & B for Outfall Mixing Zone Study

Comments:

- These are:
- ☐ Per your Request
 - ☐ For your Information
 - ☐ For your Review and Approval
 - ☐ For your Files
 - ☒ For your Action

Sincerely,

Bill Wight

cc:



Parametrix, Inc.

Sumner Bellevue Bremerton Portland

STANDARD AGREEMENT FOR PROFESSIONAL SERVICES

Page 1 of 2

PARAMETRIX OFFICE ADDRESS 7820 NE Holman, Suite B-6, Portland, Oregon
PROJECT NAME Outfall Mixing Zone Evaluation PROJECT NUMBER _____
CLIENT City of Newberg
ADDRESS 414 East First Street
Newberg, Oregon 97132

SUBJECT TO THE TERMS of this agreement, Parametrix, Inc. shall perform the following services: _____
Exhibit "A" attached

COMPENSATION by the CLIENT to Parametrix, Inc. to be on the basis of time and materials, as detailed in
Exhibit "B" attached. Task budgets shall not be exceeded without the approval
of the City of Newberg.

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b) Parametrix will have no contractual relationship with Smurfit Newsprint, Inc.
(Provision 12, following) Payment for Schedule II Services (Smurfit) shall be
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Approved for CLIENT

By _____

Title _____

Date _____

Accepted for PARAMETRIX, INC.

By [Signature]

Title Branch Manager

Date _____

PROVISIONS

Page 2 of 2

1. Authorization to Proceed

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The law of the state, or province, of Oregon shall govern the validity of this Agreement, its interpretation and performance, and any other claims related to it; venue of any lawsuit shall be in Oregon.

11. Asbestos or Hazardous Substances

To the maximum extent permitted by law, the CLIENT will indemnify and defend Parametrix and its officers, employees, subconsultants, and agents from all claims, damages, losses, and expenses, including, but not limited to, direct, indirect, or consequential damages and attorney's fees arising out of or relating to the presence, discharge, release, or escape of hazardous substances, contaminants, or asbestos on or from the Project.

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Exhibit A
Scope of Services

General

The City of Newberg and Smurfit Newsprint, Inc., wish to complete a combined outfall mixing zone evaluation using the fluorescent dye study method outlined in the Parametrix proposal of May 19, 1993. Services to be provided are as follows:

Schedule I City of Newberg

- | | |
|---------------|--|
| <i>Task 1</i> | <i>Outfall Mixing Zone Evaluation (one outfall)</i> |
| <i>Task 2</i> | <i>Bioassay Study</i> |
| <i>Task 3</i> | <i>Industrial Pretreatment Local Limits Evaluation</i> |

Schedule II Smurfit Newsprint, Inc.

- | | |
|---------------|--|
| <i>Task 1</i> | <i>Outfall Mixing Zone Evaluation (1 outfall)</i>
<i>(Smurfit results will be included in the Newberg report - one combined report will be prepared.)</i> |
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Task 1 Outfall Mixing Zone Evaluation

A. Mobilization for Fluorescent Dye Study

Objectives

- To mobilize for conducting a comprehensive fluorescent dye study during the August/September low flow season in the Willamette River.

Methods/Approach

- Upon notice to proceed from the City of Newberg, the study team will mobilize for conducting field studies for the level of effort required. We request two weeks notification in order to purchase supplies, prepare equipment and schedule equipment for the day of the field study.

Guidance for field and laboratory procedures are from the following documents:

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B. Fluorescent Dye Study

Objective

- To conduct a fluorescent dye study during annual low river flows for the City of Newberg's 24-inch outfall and the nearby main Smurfit outfall into the Willamette River.

Methods/Approach

Our approach to conducting a comprehensive fluorescent dye study will be to measure in-situ effluent concentrations using a Turner Model 10-AU digital fluorometer within and around the mixing zone and at the boundary of the ZID. Specifics are detailed below:

Plant Flows – We will attempt to conduct the field study as near to average dry weather plant design flows as possible. Plant hydraulics will be investigated to determine whether increasing flows to 4 mgd is feasible. If not feasible, the study will take place at normal dry weather flows and extrapolated to average dry weather design flows using mathematical models.

Navigation – The working platform for water sampling within and around the dilution zone will be a 17-foot Boston Whaler. Approximate vessel position from the outfall will be determined by measuring the distance along a metered rope tied to an anchor placed next to the outfall. True vessel position will be determined by land based surveyor. Sample positioning is accurate to ± 3 feet.

Dye Injection – Rhodamine WT fluorescent dye will be used as the tracer. The Rhodamine dye solution will be metered into the effluent with a constant displacement pump. Dye quantities will be precisely measured so that discoloration of the Willamette River will be kept to the minimum necessary for detection over the range of dilutions anticipated. No health or harmful effects are associated with the concentrations of dye to be used (Turner Designs, 1991).

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Sampling – A Turner Model 10-AU digital fluorometer will be used to record plume effluent dye concentrations. An advancement over its predecessor, the Turner Model 10-AU can continuously record temperature compensated dye concentrations at a specified sampling interval. We intend to run five or more continuous transects through the effluent plume with a five-second sampling interval. Samples will be taken both horizontally from plume fringe to shore and vertically from river surface to bottom. Real-time fluorometer readings will aid in positioning the survey vessel. Sampling will be intensified at locations of the plume centerline, or where the dilution factor is lowest, and thus more critical.

Currents – Currents at the outfall location will be measured with surface drogues. Current measurement will assist in calibrating the computer model for subsequent extrapolation to higher plant flows or higher river flows if 7Q10 conditions in the Willamette are not observed.

Laboratory Analysis – Both before and after the one-day summer field study the fluorometer will be calibrated to established Rhodamine WT dye solution standards. Several bottled samples will be taken during the dye study and later analyzed in the lab as a further check on fluorometer calibration. Using our sampling and sample verification methods, better than 98 percent accuracy can be expected in measured dilution factors.

C. Diver Sampling

Objectives

- To locate and mark the end of the outfall with a buoy.
- To sample the effluent plume within and around the ZID (0-30 feet from the outfall).
- To verify diffuser function by visual observation of the effluent plume.
- To include diver collected sample results in the Final Report.
- To apply measured dilutions to effluent and receiving water toxicant data to determine compliance with acute water quality standards.

Methods/Approach

Two certified and insured divers will mark the end of the outfall with a buoy prior to the dye study to aid in vessel navigation. During dye injection the divers will sample the effluent plume in and around the ZID (0-30 feet from the outfall). This will be accomplished by measuring fixed radial distances from the discharge port as marked by knots in a rope which will be attached to the outfall. Anticipated sample stations are 5, 10, 15 and 20 feet from the outfall in the plume centerline. Repeat samples will be taken. Outfall integrity will be visually checked during the study by visual observation of the tinted effluent plume.

Following the field study, diver collected samples will be analyzed in the laboratory to determine effluent concentrations and compute dilution factors. Dilution vs distance curves will be drawn. Measured dilution factors will be applied to effluent and receiving water toxicant data to determine compliance with water quality standards.

Products

Diver collected sample results will be presented in the final report.

D. Final Report/Mixing Zone Evaluation

Objectives

- To characterize the zone of initial dilution (near field) and the mixing zone boundary (far field) at critical low flow river flows and average dry weather wastewater treatment plant flows.
- To express in terms of dilution factors the dilution within the mixing zone, its boundaries, and at the edge of the zone of initial dilution.
- To evaluate the ability of the discharge to comply with water quality standards for total chlorine residual and other toxicants (i.e., ammonia and metals).
- To calibrate the hydraulic mathematical model with the detailed dye study.

Methods/Approach/Product

The final report to the City of Newberg will be similar to those provided as examples for Portland, Gresham and Montesano. The final report will include a study plan and schedule for complying with the water quality standards for chlorine residual. However, the study plan will not include pre-design of facilities required to comply with these requirements.

Following dye testing, a water quality analysis will be conducted. Discharge monitoring reports (DMRs) from the plant will be required as well as all available toxicant scans. The foremost toxicant of concern is chlorine. At the City's request we will derive chlorine permit limits using the procedure described in the *Technical Support Document for Water Quality Based Toxics Control* (EPA, March 1991).

Toxicants scans will also be obtained from the Smurfit Newsprint, Inc. outfall to determine whether common toxicants are present and whether synergistic effects are likely.

An evaluation of Newberg's and Smurfit's existing defined mixing zones will be made to determine if mixing zone size increase is

appropriate. According to the EPA, mixing zones should reflect the hydrodynamics of the discharge.

Schedule

Task 1 shall be completed by October 15, 1993.

Task 2 Bioassay Studies

Parametrix will conduct bioassay as detailed in Schedule D of the City of Newberg's current NPDES Permit. Four quarterly effluent samples will be studied for the three specified organisms. Parametrix will supply a cooler and sample bottles. City staff shall collect the samples and ship the cooler to the Parametrix Bioassay Laboratory.

Task 3 Industrial Pretreatment Local Limits Evaluation

A technical evaluation of the need to revise local limits shall be performed in accordance with Paragraph 4 of Schedule E of the City of Newberg's current NPDES Permit. A more detailed scope of services will be developed for this work as part of Schedule I, Task 1.

Exhibit B
Compensation

Schedule I City of Newberg

Task 1	Outfall Mixing Zone Evaluation	\$14,080
Task 2	Bioassay Studies (4 @ \$2,900 each)	\$11,600
Task 3	Industrial Pretreatment Local Limits Evaluation	To be determined

Schedule II Smurfit Newsprint, Inc.

Task 1	Outfall Mixing Zone Evaluation (main outfall only)	\$14,470
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Task budgets shall not be exceeded without the approval of the City of Newberg



Parametrix, Inc.

Sumner Bellevue Bremerton Portland

STANDARD AGREEMENT FOR PROFESSIONAL SERVICES

Page 1 of 2

PARAMETRIX OFFICE ADDRESS 7820 NE Holman, Suite B-6, Portland, Oregon
PROJECT NAME Outfall Mixing Zone Evaluation PROJECT NUMBER _____
CLIENT City of Newberg
ADDRESS 414 East First Street
Newberg, Oregon 97132

SUBJECT TO THE TERMS of this agreement, Parametrix, Inc. shall perform the following services: _____
Exhibit "A" attached

COMPENSATION by the CLIENT to Parametrix, Inc. to be on the basis of time and materials, as detailed in
Exhibit "B" attached. Task budgets shall not be exceeded without the approval
of the City of Newberg.

When compensation is on a cost-reimbursable basis, a service charge of 15 percent will be added to Direct Expenses. All sales, use, value added, business transfer, gross receipts, or other similar taxes will be added to ENGINEER's compensation when invoicing CLIENT.

OTHER TERMS (including time for performance or completion of the work) a) Notice to Proceed will be on a
schedule and task basis by the City of Newberg.
b) Parametrix will have no contractual relationship with Smurfit Newsprint, Inc.
(Provision 12, following) Payment for Schedule II Services (Smurfit) shall be
an obligation of the City of Newberg.

Services covered by this Agreement will be performed in accordance with the PROVISIONS stated on Page 2 of this form and any attachments or schedules. This Agreement supersedes all prior agreements and understandings with respect to the work contemplated under this agreement and may only be changed by written amendment executed by both parties.

Approved for CLIENT

By _____

Title _____

Date _____

Accepted for PARAMETRIX, INC.

By [Signature]

Title Branch Manager

Date _____

PROVISIONS

1. Authorization to Proceed

Execution of this Agreement by the CLIENT will be authorization for Parametrix, Inc. to proceed with the work, unless otherwise provided for in this Agreement.

2. Salary Costs

Parametrix Salary Costs, when the basis of compensation, are the amount of wages or salaries paid Parametrix, Inc. employees for work directly performed on CLIENT's Project plus a percentage applied to all such wages or salaries to cover all payroll-related taxes, payments, premiums, and benefits.

3. Per Diem Rates

Parametrix Per Diem Rates, when the basis of compensation, are those hourly or daily rates charged for work performed on CLIENT's Project by Parametrix, employees of the indicated classifications. These rates are subject to annual calendar year adjustments; include all allowances for salary, overheads and fee; but do not include allowances for Direct Expenses.

4. Direct Expenses

Parametrix's Direct Expenses, when part of the basis of compensation, are those costs incurred on or directly for the CLIENT's Project, including, but not limited to, necessary transportation costs, including current rates for Parametrix vehicles; meals and lodging; laboratory tests and analyses; computer services; word processing services; telephone, printing, binding and reproduction charges; all costs associated with outside consultants, and other outside services and facilities; and other similar costs. Reimbursement for Direct Expenses will be on the basis of actual charges when furnished by commercial sources and on the basis of current rates when furnished by Parametrix, Inc.

5. Payment to Parametrix, Inc.

Monthly invoices will be issued by Parametrix for all work performed under this Agreement. Invoices are due and payable on receipt. Interest at the rate of 1½% per month, or the maximum permitted by law if lesser, will be charged on all past-due amounts starting 30 days after date of invoice. Payments will first be credited to interest and then to principal.

6. Standard of Care

The standard of care applicable to Parametrix, Inc.'s services will be the degree of skill and diligence normally employed by professional engineers or consultants performing the same or similar services.

7. Termination

This Agreement may be terminated for convenience by either party on 30 days' written notice; or for cause, if either party fails to substantially perform the work in accordance with this Agreement through no fault of the other and does not commence correction of such work and nonperformance within 5 days of written notice and diligently complete the correction thereafter. On termination, Parametrix will be paid for all authorized work performed up to the termination date plus termination expenses, such as but not limited to, reassignment of personnel, subcontract termination costs, and related closeout costs.

8. Cost Opinions

Any cost opinions or Project economic evaluations provided by Parametrix, Inc. will be on a basis of experience and judgment, but, since it has no control over market conditions or bidding procedures, Parametrix, Inc. cannot warrant that bids, ultimate construction cost, or Project economics will not vary from these opinions; and client waives any claim for the accuracy or inaccuracy of such opinions.

9. Limitation of Liability

Notwithstanding any other provisions of this agreement, Parametrix's liability for CLIENT's damages will not exceed the compensation received by Parametrix under this Agreement.

10. Severability and Survival

If any of the provisions contained in this Agreement are held illegal, invalid or unenforceable, the enforceability of the remaining provisions shall not be impaired thereby. The limitations of liability and indemnities will apply regardless whether Parametrix' liability arises under applicable statute or case or common law, including without limitation by reason of enumeration herein, negligence, strict liability or any other type of cause of action, and shall apply to Parametrix, its officers, and employees.

The law of the state, or province, of Oregon shall govern the validity of this Agreement, its interpretation and performance, and any other claims related to it; venue of any lawsuit shall be in Oregon.

11. Asbestos or Hazardous Substances

To the maximum extent permitted by law, the CLIENT will indemnify and defend Parametrix and its officers, employees, subconsultants, and agents from all claims, damages, losses, and expenses, including, but not limited to, direct, indirect, or consequential damages and attorney's fees arising out of or relating to the presence, discharge, release, or escape of hazardous substances, contaminants, or asbestos on or from the Project.

12. No Third Party Beneficiaries

This Agreement gives no rights or benefits to anyone other than the CLIENT and Parametrix, Inc. and has no third party beneficiaries.

Parametrix's services are defined solely by this Agreement, and not by any other contract or agreement that may be associated with the Project.

13. Insurance

Parametrix shall maintain public liability and property damage insurance which shall protect Parametrix from personal injury or property damage claims arising from its negligent performance of work under this Agreement. The limits of liability for such insurance shall be \$1,000,000 combined single limit.

14. Disputes

In the event of any dispute arising out of this agreement, the parties agree to submit the dispute to non-binding mediation and binding arbitration under the then prevailing rules of the American Arbitration Association (AAA) for construction industry disputes, provided that no party objects to arbitration within 30 days after a demand for arbitration is filed with AAA. In any action brought for such dispute, the prevailing party shall be entitled to recover its reasonable costs and attorney fees.

Exhibit A
Scope of Services

General

The City of Newberg and Smurfit Newsprint, Inc., wish to complete a combined outfall mixing zone evaluation using the fluorescent dye study method outlined in the Parametrix proposal of May 19, 1993. Services to be provided are as follows:

Schedule I City of Newberg

- | | |
|---------------|--|
| <i>Task 1</i> | <i>Outfall Mixing Zone Evaluation (one outfall)</i> |
| <i>Task 2</i> | <i>Bioassay Study</i> |
| <i>Task 3</i> | <i>Industrial Pretreatment Local Limits Evaluation</i> |

Schedule II Smurfit Newsprint, Inc.

- | | |
|---------------|--|
| <i>Task 1</i> | <i>Outfall Mixing Zone Evaluation (1 outfall)</i>
<i>(Smurfit results will be included in the Newberg report - one combined report will be prepared.)</i> |
|---------------|--|

Task 1 Outfall Mixing Zone Evaluation

A. Mobilization for Fluorescent Dye Study

Objectives

- To mobilize for conducting a comprehensive fluorescent dye study during the August/September low flow season in the Willamette River.

Methods/Approach

- Upon notice to proceed from the City of Newberg, the study team will mobilize for conducting field studies for the level of effort required. We request two weeks notification in order to purchase supplies, prepare equipment and schedule equipment for the day of the field study.

Guidance for field and laboratory procedures are from the following documents:

- *Measurement of Time of Travel and Dispersion in Streams by Dye Tracing*, Book 3, Chapter A9, Techniques of Water-Resources Investigations, 1982.
- *Fluorometric Procedures for Dye Tracing*, Book 3, Chapter A12, Techniques of Water-Resources Investigations, 1986.
- *Fluorometric Facts*, Monographs of Dye Tracing Procedures, Sunnyvale, California, 1991.

B. Fluorescent Dye Study

Objective

- To conduct a fluorescent dye study during annual low river flows for the City of Newberg's 24-inch outfall and the nearby main Smurfit outfall into the Willamette River.

Methods/Approach

Our approach to conducting a comprehensive fluorescent dye study will be to measure in-situ effluent concentrations using a Turner Model 10-AU digital fluorometer within and around the mixing zone and at the boundary of the ZID. Specifics are detailed below:

Plant Flows – We will attempt to conduct the field study as near to average dry weather plant design flows as possible. Plant hydraulics will be investigated to determine whether increasing flows to 4 mgd is feasible. If not feasible, the study will take place at normal dry weather flows and extrapolated to average dry weather design flows using mathematical models.

Navigation – The working platform for water sampling within and around the dilution zone will be a 17-foot Boston Whaler. Approximate vessel position from the outfall will be determined by measuring the distance along a metered rope tied to an anchor placed next to the outfall. True vessel position will be determined by land based surveyor. Sample positioning is accurate to ± 3 feet.

Dye Injection – Rhodamine WT fluorescent dye will be used as the tracer. The Rhodamine dye solution will be metered into the effluent with a constant displacement pump. Dye quantities will be precisely measured so that discoloration of the Willamette River will be kept to the minimum necessary for detection over the range of dilutions anticipated. No health or harmful effects are associated with the concentrations of dye to be used (Turner Designs, 1991).

Dye will be injected into the chlorine contact chamber. Final effluent will be sampled at Manhole #1 on the river bank to accurately verify final effluent dye concentrations prior to discharge into the Willamette River. The effect of chlorine residual, ammonia, and other effluent chemical constituents on dye concentration (known as quenching) is expected to be minimal.

Sampling – A Turner Model 10-AU digital fluorometer will be used to record plume effluent dye concentrations. An advancement over its predecessor, the Turner Model 10-AU can continuously record temperature compensated dye concentrations at a specified sampling interval. We intend to run five or more continuous transects through the effluent plume with a five-second sampling interval. Samples will be taken both horizontally from plume fringe to shore and vertically from river surface to bottom. Real-time fluorometer readings will aid in positioning the survey vessel. Sampling will be intensified at locations of the plume centerline, or where the dilution factor is lowest, and thus more critical.

Currents – Currents at the outfall location will be measured with surface drogues. Current measurement will assist in calibrating the computer model for subsequent extrapolation to higher plant flows or higher river flows if 7Q10 conditions in the Willamette are not observed.

Laboratory Analysis – Both before and after the one-day summer field study the fluorometer will be calibrated to established Rhodamine WT dye solution standards. Several bottled samples will be taken during the dye study and later analyzed in the lab as a further check on fluorometer calibration. Using our sampling and sample verification methods, better than 98 percent accuracy can be expected in measured dilution factors.

C. Diver Sampling

Objectives

- To locate and mark the end of the outfall with a buoy.
- To sample the effluent plume within and around the ZID (0-30 feet from the outfall).
- To verify diffuser function by visual observation of the effluent plume.
- To include diver collected sample results in the Final Report.
- To apply measured dilutions to effluent and receiving water toxicant data to determine compliance with acute water quality standards.

Methods/Approach

Two certified and insured divers will mark the end of the outfall with a buoy prior to the dye study to aid in vessel navigation. During dye injection the divers will sample the effluent plume in and around the ZID (0-30 feet from the outfall). This will be accomplished by measuring fixed radial distances from the discharge port as marked by knots in a rope which will be attached to the outfall. Anticipated sample stations are 5, 10, 15 and 20 feet from the outfall in the plume centerline. Repeat samples will be taken. Outfall integrity will be visually checked during the study by visual observation of the tinted effluent plume.

Following the field study, diver collected samples will be analyzed in the laboratory to determine effluent concentrations and compute dilution factors. Dilution vs distance curves will be drawn. Measured dilution factors will be applied to effluent and receiving water toxicant data to determine compliance with water quality standards.

Products

Diver collected sample results will be presented in the final report.

D. Final Report/Mixing Zone Evaluation

Objectives

- To characterize the zone of initial dilution (near field) and the mixing zone boundary (far field) at critical low flow river flows and average dry weather wastewater treatment plant flows.
- To express in terms of dilution factors the dilution within the mixing zone, its boundaries, and at the edge of the zone of initial dilution.
- To evaluate the ability of the discharge to comply with water quality standards for total chlorine residual and other toxicants (i.e., ammonia and metals).
- To calibrate the hydraulic mathematical model with the detailed dye study.

Methods/Approach/Product

The final report to the City of Newberg will be similar to those provided as examples for Portland, Gresham and Montesano. The final report will include a study plan and schedule for complying with the water quality standards for chlorine residual. However, the study plan will not include pre-design of facilities required to comply with these requirements.

Following dye testing, a water quality analysis will be conducted. Discharge monitoring reports (DMRs) from the plant will be required as well as all available toxicant scans. The foremost toxicant of concern is chlorine. At the City's request we will derive chlorine permit limits using the procedure described in the *Technical Support Document for Water Quality Based Toxics Control* (EPA, March 1991).

Toxicants scans will also be obtained from the Smurfit Newsprint, Inc. outfall to determine whether common toxicants are present and whether synergistic effects are likely.

An evaluation of Newberg's and Smurfit's existing defined mixing zones will be made to determine if mixing zone size increase is

appropriate. According to the EPA, mixing zones should reflect the hydrodynamics of the discharge.

Schedule

Task 1 shall be completed by October 15, 1993.

Task 2 Bioassay Studies

Parametrix will conduct bioassay as detailed in Schedule D of the City of Newberg's current NPDES Permit. Four quarterly effluent samples will be studied for the three specified organisms. Parametrix will supply a cooler and sample bottles. City staff shall collect the samples and ship the cooler to the Parametrix Bioassay Laboratory.

Task 3 Industrial Pretreatment Local Limits Evaluation

A technical evaluation of the need to revise local limits shall be performed in accordance with Paragraph 4 of Schedule E of the City of Newberg's current NPDES Permit. A more detailed scope of services will be developed for this work as part of Schedule I, Task 1.

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