Gravity Consulting LLC
32617 SE 44th St
Fall City, WA 98024

LETTER OF INTRODUCTION

April 30, 2014

Regarding: SRRTTF Field Sampling Services for PCBs

Contacts: c.page@wsu.com, aubri.denevan@wsu.com, bud.leber@kaisertwd.com

Gravity Consulting LLC (Gravity) is pleased to provide the following proposal to conduct field sampling support in the Spokane River for PCB analysis.

We were excited to read this RFP and, based on past successful project experience, recognize that we have an ideal team to meet the unusual challenges of safely collecting high-quality water quality data on the Spokane River. We understand the critical need for collecting quality PCB data and with demonstrating compliance with water quality requirements on the Spokane River. In providing responses for the requested RFP, we are providing extensive detail on specific experience of Gravity related to river sampling and PCB studies.

Gravity brings the following key attributes and capabilities to the SRRTTF project:

- Local presence and overall knowledge of the Spokane River Basin. As a NW-based project team working with many of this project's PRPs on other projects, we have gained an understanding of the business drivers and political ramifications particular to this project.
- Credible reputation and relationship with USEPA Region 10 staff, Ecology, and regional Natural Resource Trustees.
- Successful completion of many similar PCB studies programs both upland and inwater. We know the quality control requirements and expectations of Trustee Groups and the public. Gravity has extensive experience conducting trace contaminant testing and owns proprietary technology for sampling for PCBs.
- Significant experience working on Northwest rivers collecting water and sediment data for both public and private clients. Our team members average over 15 years of experience each in the Northwest working on local rivers from the Spokane, Snake and Columbia

Gravity is a listed small business that specializes in the acquisition and analysis of quality – defensible data for aquatic projects and the development of technology for the collection and analysis of water and sediment samples. Gravity has extensive current profiling and water experience; we understand the technology and the significance of data quality objectives. From marine studies to sediment sampling to custom geophysical equipment, Gravity has the instruments, knowledge and expertise to implement a successful study.

Gravity's extensive water and sediment experience comes from both intensive international projects and sensitive local programs. Marine projects often include some of the most demanding requirements and it is critical to have the experience to understand the precedent and liabilities to evaluate risks properly. Gravity excels at collecting the information you need to make the correct decisions and provide solutions to solve your site challenges.

Gravity's staff have significant experience in implementing successful water quality programs. Gravity brings to each project an unbeatable team of professionals whom perform to the highest level of quality and safety.

Thank you for the opportunity to present our team to implement your Water Quality Monitoring Program. We look forward to talking with you about this important project.

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Contact and Business Information

Firm Name: Gravity Consulting LLC

Firm Address: 32617 SE 44th Ave SE, Fall City, WA 98024

Project Contact Name: Shawn Hinz

Project Contact Phone: 425-281-1471

Project Contact E-mail: shawn@gravityenv.com

Is the Contractor a Minority or Women's Business Enterprise: No, we are a Small Business

1. Proposed Approach

Gravity proposes to provide staff and equipment for conducting the water sampling. Gravity has significant experience collecting water samples for federal CERCLA, RCRA and NPDES sites and state programs. Gravity has specific experience collecting low level trace contaminants for organics and PCBs from using our proprietary high volume sampling equipment (PR1600), the AXYs Infiltrex system and CLAM samplers. The below program lists out our approach, qualifications and experience. Attachment 2 includes statements of qualifications for specific sampling and equipment Gravity can provide.

1.1 Minimum Qualifications

The purpose of this proposal section is to provide the information to demonstrate exactly how our team would achieve all of the required qualifications.

PROJECT MANAGEMENT

Our project manager, Shawn Hinz, has 15 years of project management experience, including projects of similar scope and complexity. He has led over 20 projects that have involved PCB sampling in waterbodies, selecting appropriate team members for project implementation, and taking the necessary corrective actions to ensure project-specific goals were met for data quality acquisition and reporting.

Recent experience has included managing two successful multi-year river water quality studies where trace level PCBs, and other parameters occurred through seasonal high river flows that were more than 100 times base flows. As project manager, Shawn would primarily be responsible for:

- Assisting with sampling design development
- Preparation of any necessary plans
- onsite collection of samples

SAMPLING IMPLEMENTATION

Our project manager and our technical field lead, Jeff Schut, have extensive experience in designing, and implementing water quality monitoring programs in river systems using sensitive instrumentation and ensuring high-quality data collection to meet study objectives. As the technical field lead, Jeff would primarily be responsible for:

- Ensuring health and safety plan is distributed, understood, and followed by all field staff

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- Coordination of daily sampling activities
- Coordinating access to point source sampling locations with municipal and industrial entities
- Leading sample collection activities in accordance with the requirements of the SAP and QAPP to ensure sampling methods and equipment do not adversely affect data quality and, to the extent feasible, controlling elements that could increase uncertainties
- Completion and organization of field logs, photo logs, and associated reporting

DATA MANAGEMENT AND REPORTING

Jeff Wilson has significant experience with the collection, management, and reporting of environmental data, specializing in organizing and analyzing data and managing the Gravity GIS database. His experience includes supporting several large multi-year monitoring programs by organizing data files and producing quarterly data reports that include data summaries with raw data files and meta-data in report appendices. Jeff is highly skilled in Excel, GIS and MS Access and has organized water quality monitoring data and metadata to conform to Ecology's Environmental Information Management (EIM) database and other databases. As the data management lead, Jeff would primarily be responsible for:

- Downloading and inputting field parameter results, flow rates, and sample coordinates into a database
- Development of maps and figures showing sample locations for reporting
- Working with the project manager and field team lead to produce the Completion Report

1.2 Tasks

Project Orientation and Training

Gravity project management and field staff will attend the one-day orientation and training session to be conducted by LimnoTech, the SRRTTF's Technical Advisor, in Spokane, WA for the purpose of reviewing, discussing, and clarifying any specific sampling protocol requirements or methods.

Sample Collection Site Verification

Following project orientation and training, Gravity will conduct sampling site visits to confirm accessibility and any other site-specific details that would impact sample collection methods or procedures. Key to this assessment will be consideration of safety and feasibility and any specialty equipment provisions required.

Preparation of Plans

Gravity will prepare an appropriate Health and Safety Plan (HASP) for conducting the fieldwork and sample collection activity within 2 weeks of project award. See attached example of the HASP. In addition, Gravity will prepare a plan for complying with the invasive species requirements of the Idaho Department of Environmental Quality and the Washington Department of Ecology. See attached example SOP for invasive species.

Field Data and Sample Collection

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Gravity will provide all necessary sampling equipment and staff to coordinate and conduct all aspects of the field data and sample collection activities in accordance with the SAP and QAPP. Gravity has an extensive range of sampling tools, Research vessels, and water quality sensors. We have significant experience collecting water samples using Niskin, Dip, High Volume filtration and CLAM Samplers. Gravity has conducted CLAM sampling and High Volume Sampling on the Columbia, Snake and Willamette rivers and understands the requirements for collecting quality results. All sampling activities will include the documentation of all field parameter data collection and instrument calibration as appropriate, sample collection method and location details, and any other data collection details or deviations from plan as appropriate. Gravity will be responsible for the preparation and shipping (including Chain of Custody) of collected samples to the laboratory specified by the Owner.

Synoptic Sampling – A team of 2 Gravity staff will collect surface water grab samples and replicates for QA/QC at 8 riverine sample locations using direct immersion sampling or dip samplers. Sample handling, including field filtration, and equipment decontamination will occur as specified in the SAP and task-specific SOPs. Riverine samples will be collected 7 times at each location on an every other day basis over a 13-day time period. It is anticipated that samples will be collected mid-channel by wading from shore access points at each of the locations. Additional grab samples will be collected at 8 municipal or industrial point source locations. Samples will be collected 3 times on differing days at each point source locations during the same sampling event (August 2014) as for the riverine synoptic samples.

Seasonally Integrated Sampling – A team of 2 Gravity staff will collect surface water grab samples 5 times at the Lake Coeur d'Alene outlet location during each flow regime (August 2014, Winter 2015, and Spring 2015) over a 13-day time period. That is, in accordance with the SAP, samples will be collected with at least two days between events. An additional sample will be collected during each sampling day for compositing over the entire flow regime sampling.

Dissolved oxygen, water temperature, pH, turbidity, and conductivity of all surface water locations will be measured in the field using Gravity's YSI EXO meter probe instrumentation. As needed Gravity can collect stream flow data with an Acoustic Current Profiler for comparison with Gauge Data. Measurements will be recorded on field collection data sheets and the field notebook. The exact instrument moel will be recorded in the field log book along with the daily calibration data. GPS coordinates will be recorded at each sample location using an RTK Trimble GPS.

In the event that shore access or stream conditions do not allow for wading, then sampling from a vessel may be appropriate. Gravity owns multiple custom sampling vessels that are stored near the project area (Clarkston, WA) that could be used to safely collect surface water samples.

Completion Report

Upon completion of the field data and sample collection activities, Gravity will prepare and submit to the Owner a draft Completion Report within 2 weeks. This Completion Report will document the methodologies used for sample collection and data acquisition activities and will identify any deviations from SAP and QAPP. The report shall also include flow data for each riverine and point source sample collection location and sample coordinates and maps.

2. Commercial Costing and Contract Conditions

Table 1 provides the task specific breakdown of costs for the prescribed services. Gravity has not specified contract conditions as the scope of work is currently organized for implementation.

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Gravity will provide this service in accordance with our Conditions of Service which will be specified per scope as it is provided.

Hourly & Daily Rates: Includes all field time associated with the survey works. The Gravity field crew member(s) will work continuously seven days a week on a 12-hour day work schedule until completion of each investigation. For safety, operations will only be conducted during daylight hours.

Table 1. Staff Rates

Staff	**Hour**
Shawn Hinz – Senior Scientist	$95
Jeff Schut– Senior Scientist	$95
Jeff Wilson – Environmental Engineer	$85
Steve Saugen – Field Technician	$75
Rene Trudeau – Field Technician	$75

Mobilization/Demobilization (Lump Sum, Per Mobilization): Includes all in house planning/preparation and personnel/equipment/travel expenses to the project site.

Table 2. Proposed Costs

Proposed Project Cost Break Down		
Scope Element	Cost ($)	Estimated Hours
Project Orientation and Training	*$3,058*	*28*
Sample Collection Site Verification	*$3,058*	*28*
Preparation of Plans	*$4,250*	*50*
Field Data and Sample Collection	*$77,365*	*576*
Completion Report	*$5,100*	*60*

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3. Safety

All survey and associated works shall be undertaken in a manner to ensure the elimination of risks as far as reasonably practical. Risk assessments will be carried out and safety precautions put in place. If during the course of the works any incident occurs resulting in potential or actual harm and/or damage to workforce, communities or the environment, Gravity will immediately inform the Owner.

Gravity's Field Lead, Jeff Schutt will evaluate every situation for possible hazards. If there is an identified hazard, then it will be addressed before continuing with the activity. Gravity acknowledges that transport means, equipment, survey personnel and crews provided for this project will be its responsibility at all times, and any loss, injury or damage suffered or caused by them shall be at Gravity's risk.

River work is a high-risk activity and health, safety and environmental protection will be given foremost consideration in the execution of the Work and shall be promoted in a proactive and highly visible manner throughout Gravity's work.

All Gravity staff have Hazardous Waste Operators Certification, First Aid/CPR Training, and most of our staff have level 2 Emergency Medical Certification.

4. Relevant Project Experience

Gravity has been involved in hundreds of riverine studies providing water, sediment, geophysical, hydrographic, and testing services for, assessment, design and construction programs. Gravity has been involved in many highly sensitive projects from challenging river surveys in the NW to offshore in the Gulf of Mexico to Port development studies in Brazil and dredging projects in Asia and the South Pacific.

Below are a few example projects that Gravity has been involved in:

Portland Harbor Superfund Site, Portland, OR

- Field leads for Contaminant investigation at the Superfund Site
- Specialist sampling for trace PCBs and Dioxins in water
- Preparation of field sampling plans, reports, and sampling and analysis plans

River Corridor Closures Project Hanford Site, Richland, WA

- Subject media experts for Department of Energy
- Developed and implemented extensive in-water investigations
- Project management overseeing contractual and budget tasks
- Managed field data collection operations, coordinating subcontractors
- Conducted water quality and biological monitoring during remediation phases

Coeur d'alene River – Bunker Hill Mine, Harrison, ID

- Field lead for collection of water and sediment samples
- Conducted seasonal sampling in challenging flow conditions
- Collected trace contaminant water samples for heavy metals

Upper Columbia River – Teck Cominco

- Primary field leads for collection of water, biological and sediment samples
- Conducted high volume trace contaminant testing for metals and organics
- Managed sampling logistics on over 200 miles of river in Washington and Canada

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Potlatch Paper Mill Discharge Permit Studies – Idaho and Washington

- Served as the project lead to Potlatch's outside counsel on environmental issues associated with Potlatch's National Pollutant Discharge Elimination System (NPDES) discharge to the Snake River.
- managed 5 major environmental studies required by the U.S. Environmental Protection Agency (EPA) in conjunction with the facility's NPDES permit.
- Sampling programs implemented included sediment, receiving water, bivalve, and fish tiers.
- Conducted trace contaminant testing for PCBs and Dioxins

Passaic River Superfund Site – New Jersey

- Supported a multi-year CERCLA project on the Passaic River in NJ and New York.
- Gravity provided staff and equipment for collecting water and sediment with Gravity's custom testing equipment
-
- High Volume trace contaminant water testing for PCBs and Dioxins
- Field leads for River bottom and benthic assessments

Tengiz Chevron Oil, Kazakhstan

- Supported environmental impact assessments for dredge
- Conducted engineering feasibility/mitigation plans
- Implemented in-country sediment and water sampling
- Provided over-site and QA/QC of Bathymetric and Geophysical surveys

VALE Iron, Sao Luis Brazil

- Supported feasibility study for port development
- Conducted water, hydrographic and sediment surveys
- Conducted marine geophysical surveys for liquefaction issues with pile driving
- Conducted current profile and turbidity studies for sediment transport modeling

5. Key Staff

Gravity's staff have significant experience and qualifications in the marine and environmental industry while remaining a small owner-operator based company. Gravity was started in 2004 by a core group of scientists that identified a need for the research and development of better equipment and technology for marine survey programs. Because we are both scientists and operators we understand both the data quality objectives and the appropriate collection methods to achieve quality results. Key staff available for this project are discussed below and additional experience for each is provided in the attached resumes.

Shawn Hinz, MSc Environmental Scientist

Mr. Shawn Hinz is the managing partner at Gravity. Mr. Hinz is the company's principal scientist specializing in environmental assessments with more than fourteen years of experience in the industry. Although Gravity is less than 10 years old, its staff have been involved in hundreds of geotechnical, oceanographic and environmental field studies in the USA and abroad in Europe, Africa, Asia, and the South Pacific. Mr. Hinz has extensive experience in assessing environmental systems, with particular emphasis on the characterization of environmental contaminants. He has performed numerous

investigations from the initial design stages to implementation, data collection, analysis, risk assessment and reporting for both industrial and government clients. He is experienced and effective both in planning and implementing highly technical projects, and dealing with associated strategy and technology challenges. With his experience in both supporting the management of large environmental projects and development of technology to implement these projects, Mr. Hinz has a unique skill set for ensuring full life-cyle QA/QC of projects.

Jeff Schut, Environmental Toxicologist

Mr. Jeff Schut is Gravity's senior environmental toxicologist. Mr. Schut has 21-years of experience in environmental projects involving risk assessment, site characterization, water quality, sediment quality, toxicology, and field sampling investigations. Field assignments have included conducting stream surveys, habitat assessments, stream gauging, mixing zone studies, surface water and sediment sampling in lentic and lotic environments, stream temperature monitoring, use of "ultra-clean" sampling techniques, and rapid bioassessments for streams. Mr. Schut is experienced in conducting, interpreting, and reporting toxicity and bioaccumulation tests. He has performed hundreds of water, sediment, and soil bioassay tests for industrial and municipal clients, receiving waters, U.S. Department of Defense sites, NPDES permitting, and development of site-specific criteria. Mr. Schut has extensive experience working on PCB contaminated sites, which includes co-authoring the following:

With D. Shelton, P.J. Townley, and W.E. Grannis. "Bioaccumulation Patterns of PCB Congeners from Estuarine Sediments into the Aquatic Food-Web in a Tropical Ecosystem on Oahu." Presented at the Annual Meeting of the Society of Environmental Toxicology and Chemistry, Portland, OR. 2004.

Jeff Wilson, MSc Environmental Engineer

Mr. Jeff Wilson is an environmental engineer with Gravity Consulting LLC, specializing in supporting sediment and aquatic resource studies. Mr. Wilson has extensive sediment transport and hydrodynamic modeling experience. He has participated in most phases of research studies from the initial design stages to implementation, data collection, analysis and modeling. He is experienced and effective both in implementation of sampling designs and efficient, sound data collection in the field. Mr. Wilson is Gravity's GIS and CAD lead and has extensive mapping and positioning system experience. His cross-skills in both engineering and field implementation make Mr. Wilson a critical member of the Gravity Team.

Steve Saugen, Marine Technician

Mr. Steve Saugen is one of the partners at Gravity with extensive experience in implementing sediment, hydrographic and water survey programs. Mr. Saugen is a USCG licensed captain and has expertise in field sampling programs, construction management, quality assurance oversight and monitoring. Mr. Saugen has over 15 years of marine experience and has implemented many marine field programs. Mr. Saugen has expertise in managing projects, contractor oversight, quality control/assurance and compliance with engineering specifications.

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Rene Trudeau, Marine Survey Specialist

Mr. Trudeau is a marine survey specialist with extensive experience in implementing sediment and water quality projects with particular emphasis on vessel logistics and equipment. Mr. Trudeau has expertise in marine construction management, quality assurance oversight, sediment testing programs, and site characterizations using remote sensing. Mr. Trudeau is a licensed boat captain and has more than 15 years of marine experience working from Alaska to the Gulf of Mexico and in remote locations from the South Pacific to Asia.

Thank you for the opportunity to provide this proposal and quote. Please contact me if you should have any questions.

Sincerely

Shawn Hinz

Managing Partner

Gravity Consulting LLC

Phone: 425.281.1471

STATEMENT OF QUALIFICATIONS

µltra-Trace Level Contaminant Testing

Gravity Environmental Consulting has extensive experience in measuring µltra-trace level environmental contaminates in water resources. With the increasing demand for detecting lower concentrations of organic contaminates in waters, Gravity has developed protocols and field sampling equipment to collect samples for µltra-trace analysis.

From research teaming with analytical laboratories to in-field testing with multiple government agencies, Gravity has developed a custom µltra-Trace Contaminant Sampler (µTCS) that is method proven.

425-281-1471

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Consulting
Sales
Staffing
Support

Exacting the art of **µltra-trace sampling**

GRAVITY Consulting LLC

μltra-Trace Contaminant Testing
~working for your site

The concept of μltra-trace contaminant sampling (μTCS) is the rapid acquisition of a large volume of water and the subsequent extraction of both solids and dissolved contaminants onto a solid substrate. The concentrated sample can then be delivered to a laboratory as a solid and extracted for organic analysis at μltra-trace levels.

Gravity has worked in cooperation with the US Environmental Protection Agency (EPA) and multiple national laboratories to establish methods that assure quality control. Gravity's staff has extensive experience in planning, designing and implementing water sampling programs.

Gravity's μTCS has been used to collect PCB and Dioxin/furan Congeners, Pesticides, PAHs and many other organic contaminants. Because the μTCS utilizes a vortex separator to collect solid phase particles it has also been utilized to collect in-organic contaminants such as heavy metals.

The μTCS also has the capability of determining soluble fractions versus particulate fractions of contaminates in the waters sampled.

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.....your testing needs

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GRAVITY ENVIRONMENTAL CONSULTING PROVIDES TOTAL END TO END SOLUTIONS.

REPRESENTATIVE PROJECTS

Willamette River, Portland, OR
EPA Superfund project – PRP group
-Surface water sampling for trace PCB and Dioxin contamination over 7 miles of waterway in multiple seasonal events.

Snake River, Lewiston, ID
NPDES Permit Compliance – Potlatch Paper Mill
-Surface water sampling for trace dioxins over 40 miles of river quarterly for 3 years

Upper Columbia River, Kettle Falls, WA
EPA Superfund Project – Teck Cominco Mines
Surface water sampling for trace dioxins over 180 miles of river seasonally for 2 years

Gulf Of Mexico – MC252 spill
Represented BP in the Damage Assessment oil spill
- water sampling for trace PAHs to track plumes
- extraction of emulsifiers
- particle analysis and low volume sampling

LATA Parralax Facility, Piketon, OH
Department of Energy – Nuclear Facility
-Stream water sampling for trace PCB's near a Nuclear Energy site.

CUSTOM SOLUTIONS
Gravity Environmental Consulting provides customized solutions for site specific conditions and issues.

Gravity References

Bill Hoesman
Senior Environmental Engineer
Clearwater Paper Corporation
Ph: 208.799.1585

Yves Tondeur, Ph.D.
President & CEO
Analytical Perspectives
Ph: 910-794-1613 ext

Jeff Christian
Lab Director
Columbia Analytical Services
Ph: 360-577-7222 x3316

Contact Gravity

Shawn Hinz

425-281-1471

shawn@gravityenv.com

WATER QUALITY MONTORING

Statement of Qualifications

Gravity Consulting has extensive experience in the support and implementation of water quality monitoring programs. From trace organic high volume sampling to sediment transport studies, **Gravity** has the instruments, knowledge and expertise to implement a successful study.

GRAVITY
CONSULTING L.L.C.

Consulting

Equipment

Staffing

Support

Assessment of water resources can be challenging, each system is unique in relation to its location and environmental restrictions. **Gravity** is an expert in adapting and customizing our instruments and methodologies to each projects specific needs and limitations. Whether monitoring in high flow lotic systems or miles offshore **Gravity** has the capability to facilitate the collection of quality data in all environmental locations and conditions.

gravityenv.com

Trace Contaminant **Sampling**

Onsite solutions

for your project needs.....

Project Experience

- Dredge & Construction Water Quality
- NPDES & Storm Water Programs
- Sediment Transport Studies
- Oil Spill Response Fate & Transport
- Ultra-trace High Volume Filtration
- Outfall Dye Studies

Gravity's staff have significant experience in implementing successful sampling programs. **Gravity** represents public and private clients working in cooperation with government regulatory agencies. Gravity brings to each project an unbeatable team of professionals whom perform to the highest level of quality and safety.

GRAVITY TOTAL END TO END SOLUTIONS

REPRESENTATIVE PROJECTS

MC252 Oil Spill, Gulf of Mexico,

Water column characterization and natural resource damage, monitoring and tracking of sub-surface oil droplet size and concentrations.

Portland Harbor CERCLA, Oregon

High Volume sampling to evaluate source contamination in river system at CERCLA site

Upper Columbia River, Canada

Surface water sampling for trace dioxins in over 180 miles of river seasonally for 2 years

Clearwater Pulp & Paper, Idaho

Water quality monitoring and toxicity testing for NPDES requirements in receiving water

GRAVITY CONSULTING L.L.C.

CUSTOM SOLUTIONS

Gravity provides customized solutions for site specific conditions

Contact Gravity

Shawn Hinz

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shawn@gravityenv.com

Biography

Mr. Shawn Hinz is the managing partner at Gravity Consulting LLC. Mr. Hinz is the company's principal scientist specializing in environmental assessments with more than fourteen years of experience in the industry. His Company, Gravity Consulting, conducts environmental research and has developed considerable proprietary technology for the collection and analysis of samples. Although Gravity is less than 10 years old, its staff have been involved in hundreds of geotechnical, oceanographic and environmental field studies in the USA and abroad in Europe, Africa, Asia, and the South Pacific. Through Mr. Hinz's direction Gravity fills a unique niche in sampling programs by connecting project data objectives with practical in-field experience and technological solutions.

Education & Certifications

M.Sc. Environmental Toxicology, Western Washington University

B.S. Biology & Environmental Studies, Whitworth College

USCG Merchant Mariner License, Master 100 Ton Near Coastal

OSHA Hazardous waste operation 40 hour trained

Mr. Hinz has extensive experience in assessing environmental systems, with particular emphasis on the characterization of environmental contaminants. He has performed numerous investigations from the initial design stages to implementation, data collection, analysis, risk assessment and reporting for both industrial and government clients. He is experienced and effective both in planning and implementing highly technical projects, and dealing with associated strategy and technology challenges. With his experience in both supporting the management of large environmental projects and development of technology to implement these projects, Mr. Hinz has a unique skill set for ensuring full life-cyle QA/QC of projects. He has extensive technical writing experience and is skilled at presenting technical concepts to both scientific and general audiences.

Representative Project Experience

Koniambo Nickel Mine Port Dredge – New Caledonia, South Pacific
Environmental project manager responsible for oversight of in-water environmental compliance for a dredging project to remove and dispose of approximately 7,000,000 cubic meters of sediment to construct a 5-km long channel and berthing facilities for a new port. Responsibilities included managing the collection and evaluation of water quality measurements in the vicinity of dredging activities, evaluation of the turbidity measurements, monitoring of local coral communities, inspection/audit of dredges and sediment disposal barges to ensure compliance with environmental requirements. Mr. Hinz work closely with the client providing support for addressing concerns/questions from the local community and North Province of New Caledonia.

Oil spill damage assessment MC252 Water Column Studies – Broader Gulf of Mexico
Mr. Hinz served as lead scientist participating in multi-vessel cruises to investigate potential water column impacts resulting from the Deepwater Horizon spill incident in the Gulf of Mexico. Mr. Hinz coordinated implementation of multiple sensor and sampling technologies to evaluate oil presence in the water column. Mr. Hinz was involved in the real-time evaluation of the data and the subsequent adaptive changes to operations to improve the monitoring effort as cruises progressed. Mr. Hinz was involved in early response plume tracking, natural resource damage assessment programs and background research studies at natural seep locations in the broader Gulf of Mexico. Mr. Hinz worked closely with Battelle laboratory's to evaluate new techniques for measuring trace oil concentrations in the water and with Columbia Analytical laboratory's to improve methods for the analysis of Corexit dispersants.

Port of Seattle East Waterway Navigation Dredge – Seattle, Washington
Served as the project manager for the East Waterway navigation dredge project which is located within the Harbor Island Superfund site near Seattle, Washington. Mr. Hinz coordinated water quality monitoring and construction management during the scoping and implementation of construction activities. The investigations of dredge sediment at the site lead to a series of interim remedial activities due to the presence of significant contamination.

Cross Sound Current Profiler Study – SE Alaska
Served as field scientist supporting a current profiler study in Cross Sound, Alaska. Program including collection of ADCP data and ROV operations to retrieve a lost instrument in remote off-shore site.

Ural River Dredge Assessment for Future Growth Project - Atyrau, Kazakhstan
Environmental dredge specialist responsible for the planning, collection and evaluation of sediment in the Ural River for a oil and gas development project. Mr. Hinz worked closely with the client team and local contractors to coordinate sediment sampling on

over 50 km of river and in the Caspian Sea. Mr. Hinz developed a coring system with local contractors to successfully implement the prescribed sampling program.

Hanford Nuclear Plant 100N remediation - Washington
Served as the environmental field lead for the remediation and removal of structures at the 100n Reactor at Hanford Nuclear Site, WA. The project included the installation of an acoustic barrier system that was designed and built by Gravity to deter fish from entering the project area during construction. As field lead Mr. Hinz installed the acoustic system and interpreted marine observations and water quality monitoring data to evaluate the construction projects effects on the local river environment.

LaFarge Cement Navigation Dredge – Seattle, WA
Currently serves as the project manager for LaFarge supporting ongoing dredge and spill removal projects at the Seattle Plant which is located on the Duwamish River. Mr. Hinz coordinates water quality monitoring and construction management during the scoping and implementation of construction activities. Mr. Hinz has managed sediment sampling, stormwater run-off studies, and inwater bathymetric surveys at the site for Gravity Consulting.

Total Maximum Daily Load Study for Dominguez Channel – Los Angeles, CA
Project manager for TMDL studies for the Domingez channel in Los Angeles, CA. The program included the evaluation of data from 3 major refineries on the channel, analysis of data gaps, and implementation of future monitoring studies to calibrate the TMDL model.

Idaho Parks and Recreation Marina Dredging – Lewiston, Idaho
Project manager for dredge testing, permitting and construction projects at multiple Idaho Parks and Recreation (IDPR) marina facilities. These facilities require yearly dredge maintenance in compliance with US Army Corp of Engineers regulations.

Hanford Columbia River Environmental Assessment – Washington and Oregon
Field manager for the water resource testing program at the Hanford Nuclear. The Columbia river assessment at Hanford includes sediment, water quality, and fish tissue sampling. This project is under contract with the Department of Energy.

Millennium Corporation River Outfall Dye Study – Longview, Washington
Field manager for an outfall evaluation program under the Washington Department of Ecology. Study involved design of a dye injection and monitoring program to track discharge from industrial site outfalls. The project was implemented successfully allowing project engineers to model discharge and mixing of outfall waste in the Columbia River.

Port of Olympia dredge sediment testing – Olympia, Washington
Field manager for the testing of dredge sediments at the Port of Olympia Facility, Washington. Designed a testing program and project specific equipment for collecting undisturbed samples at the Ports terminal facilities. The investigation provided critical information on contamination associated with former activities at the site.

Bunker Hill Mine sediment transport studies - Coeur d'Alene, Idaho
Field manager for a mining superfund project managed by EPA on the Coeur d'Alene river in Idaho. The superfund project involves the characterization and ultimate remediation of over 50 miles of the Coeur d'

Department of Defense Naval facility expansion program – Guam South Pacific
Dredge environmental specialist for an expansion program in Guam, South Pacific. Program included the design of a sampling study to evaluate materials that will be dredged for naval vessel navigation. Project included integration of geotechnical and environmental data objectives with construction and engineering design challenges.

Potlatch Paper Mill Discharge Permit Studies – Idaho and Washington
Serves as the project manager to Potlatch's outside counsel on environmental issues associated with Potlatch's National Pollutant Discharge Elimination System (NPDES) discharge to the Snake River. Mr. Hinz has managed 5 major environmental studies required by the U.S. Environmental Protection Agency (EPA) in conjunction with the facility's NPDES permit. Related studies have included: sediment, receiving water, bivalve, and fish tiers. The primary constituents of concern include temperature, total suspended solids (TSS), Biological Oxygen Demand (BOD), and selected organic chemicals associated with mill discharge.

Upper Columbia River Environmental Assessment – Canada and USA
Field manager for assessment of sediment and water testing on Upper Columbia River to evaluate impacts of mining operations on human and ecological risk. The Columbia river assessment is a multi-year study that is being done in corroboration with EPA, local tribes, and USGS.

Klamath River Dam Removal Geotechnical Investigation – Northern California
Field manager leading a geotechnical investigation of two of the Klamath River dams. This study was conducted to evaluate the impact of dam removal. Gravity drilled 40 foot core samples into post-reservoir sediments for testing.

Portland Harbor Ecological Risk Assessment – Portland, Oregon
As a risk assessor, Mr. Hinz has provided technical and strategic support for both the ecological risk assessment and feasibility study associated with the Portland Harbor clean-up. This site includes approximately six miles of the lower Willamette River near its confluence with the Columbia River. Mr. Hinz represented a multi-party client group which worked cooperatively with the EPA on approach and implementation of the assessment.

Willamette River Upland Stormwater Sampling - Portland, Oregon
Participated as specialist in the conceptualization, design, and implementation of a substantial stormwater sampling program to assess upland inputs to the Lower Willamette River from various land use types. The program involved the programming, deployment, maintenance, and control of automated water samplers at 23 locations along the river. Samplers were monitored and activated via computer/phone link just prior to the onset of rainstorms. Flow data were downloaded, and filled sample bottles were recovered from the samplers after the end of each storm event. The program extended continuously over an initial period of six months and then for a follow-up interval of two months.

Passaic River Assessment – New Jersey & New York
Field scientist providing support for a multi-year CERCLA project on the Passaic River in NJ and New York. Work has ranged from providing staff and equipment for collecting sediment with Gravity's custom surface sampling equipment, to High Volume water testing, erosion evaluations in banks and river bottom and benthic assessments.

Duwamish River Assessment and Dredging – Seattle, Washington
Planned and implemented data collection and analysis for a large-scale study of the Lower Duwamish Waterway. The investigation identified candidate sites for early action under non-time critical removal authority and identified critical data requirements for completing dredging.

Work History

Managing Partner, Gravity Consulting L.L.C., 2005 – Current
Senior company partner, directly manage operations, marketing, scientific consulting, field logistics and research and development. Gravity specializes in sediment assessments, and water quality monitoring programs.

Sediment Scientist, Anchor Environmental, L.L.C., 2004 – 2006
Project manager and technical lead. Assessed aquatic sites for dredging and remediation of sediments. Planned and implemented a variety of monitoring programs and field studies for assessing water and sediment contamination. Managed projects up to 2 million.

Environmental Risk Assessor, Windward Environmental, 2002- 2004
Project manager and risk assessor. Conducted risk-based assessments of the ecological and human health impacts associated with exposure to sediments containing persistent contaminants.

Environmental Analyst, The RETEC Group, 1999-2002
Field scientist and construction over-site. Managed field work for numerous aquatic construction projects and remedial investigations at hazardous waste sites for industrial and government clients.

Environmental Analyst, Concurrent Technologies Corp., 1996-1999
Environmental management auditor. Conducted hazardous waste and pollution prevention program audits for the US Department of Defense.

Jeff Schut

Senior Environmental Toxicologist/ Risk Assessor

Distinguishing Qualifications

- Twenty-one years of experience in environmental consulting
- Sixteen years of experience in conducting both qualitative and quantitative risk assessments for industrial, DOE, and DOD hazardous waste facilities
- Senior consultant for USEPA and the USFS providing oversight of risk assessments at nine mining sites in Idaho
- Specialist in both human health and ecological risk assessments for nonradionuclide and radionuclide contamination sites
- Experienced with VPH/EPH evaluations for development of site-specific screening levels and cleanup levels at petroleum contamination sites
- Experienced in water quality and sediment sampling evaluations, NPDES permitting, and aquatic and terrestrial toxicity testing
- Experienced in conducting, interpreting (including statistical evaluation), and reporting acute and chronic aquatic toxicity and bioaccumulation tests

Education

B.S., Environmental Science, Oregon State University

Extensive Graduate-Level Studies at Oregon State University in Environmental Toxicology: Target Organ Toxicology, Air Quality, Non-Point Source Pollution, Stream Ecology, Statistics, Epidemiology, Solid and Hazardous Waste Management, Toxicology, Chemical Behavior in the Environment, and Risk Assessment

Summary of Qualifications

Mr. Schut is a senior environmental scientist with a diverse 21-years experience in environmental projects involving risk assessment, site characterization, water quality, sediment quality, toxicology, and field sampling investigations. He specializes in both ecological and human health risk assessments, aquatic and sediment toxicity, and the development of related sampling plans. He has conducted both qualitative and quantitative risk assessments for industrial and federal hazardous waste facilities. These assessments include identification of contaminants of concern, reviews of toxicological data for the contaminants, identification of exposure pathways, and assessment of the potential risks to public health and the environment. These assessments have considered all environmental media contaminated with mixtures of petroleum fuels, metals, solvents, munitions compounds, dioxins and furans, polychlorinated biphenyls, pesticides, pharmaceuticals, and PAHs.

Mr. Schut has a diverse history of project experience in water quality, sediment quality, and field-related studies. Assignments have included conducting stream surveys, habitat assessments, stream gauging, mixing zone studies, river sediment sampling, stream temperature monitoring, "ultra-clean" sampling techniques, and rapid bioassessments for streams. Mr. Schut has conducted several benthic macroinvertebrate studies and is proficient it the field methods and statistical analyses recommended by USEPA's Rapid Bioassessment Protocols.

Mr. Schut is experienced in conducting, interpreting, and reporting acute and chronic aquatic and terrestrial toxicity and bioaccumulation tests. He has performed water, sediment, and soil bioassay tests for industrial and municipal clients, receiving waters, U.S. Department of Defense sites, NPDES permitting, and development of site-specific criteria. Mr. Schut has developed standard operating procedures for conducting aquatic toxicity identification evaluations/toxicity reduction evaluations.

Representative Project Experience

Yankee Fork of the Salmon River, Idaho. Mr. Schut prepared a sampling and scoping plan for conducting a focused environmental site characterization for the Yankee Fork Floodplain Restoration Project. He conducted an assessment of the potential health effects to wildlife, fish, and humans potentially exposed to selenium and mercury as a result of the planned reconnection of stream segments cut off during historical dredging operations. The evaluation confirmed that the restoration activities pose low risk to site users.

Upper Columbia River, Canada and Washington. Mr. Schut served as a sampling team leader for a 7 week sediment sampling effort. Samples were collected in the Columbia River from British Columbia to the Grand Coulee Dam (over 150 miles). Sediment samples were collected using Gravity's custom vessels and using several types of Gravity's power grabs to depths of 400 feet below the water surface. Additional sediment samples were collected using a petite Ponar in smaller tributaries. The sediment samples were submitted for chemical analysis and bioassays, and resulting data are expected to support a future RI/FS.

Crystal and Bullion Mines, Basin, Montana. Mr. Schut has worked with USEPA as part of two remedial investigations at the Crystal and Bullion Mines located in the Basin Creek and Cataract Watersheds. Mr. Schut served as the lead risk assessor providing the evaluation of potential human and ecological exposures and risk at the mines. Site-specific bioavailability data for arsenic and lead in soils were used to provide a more realistic estimate of exposure and, subsequently, to reduce remedial action costs. USEPA's project manager, Kristine Edwards provided the following feedback from USEPA's Region 8 toxicologists, "Susan Griffin and Dan Wall have complimented Jeff Schut's risk assessment work as being some of the best they have ever seen."

Salt Chuck Mine, Prince of Wales Island, Alaska. Mr. Schut served as field team lead for intertidal sampling in Salt Chuck Bay. Sediment, surface water, soil, shallow groundwater, clam tissue, and edible plants were sampled within the bay and adjacent riparian areas as part of an RI/FS for an abandoned mine.

Multiple Phosphate Mines, Southeastern Idaho. Mr. Schut supports USEPA and USFW as a senior consultant on human health and ecological risk assessments at nine phosphate mines in southeast Idaho. Area-wide selenium contamination is of greatest concern throughout this region, while additional concerns of exposures to other heavy metals and radionuclides are also being investigated.

Anchorage Water and Wastewater Utility, Anchorage, Alaska. As part of a reauthorization request for a NPDES permit, Mr. Schut developed food-web exposure models to evaluate the significance of releasing low levels of unregulated emerging contaminants of concern (e.g., pharmaceuticals) in Cook Inlet to endangered beluga whales. The evaluation used multiple lines of evidence, including 1) modeled concentration data from effluent to beluga whales, 2) empirical fish tissue data from Cook Inlet, 3) evaluations of the potential toxicity to beluga whale prey, and 4) reviews of pharmaceutical data identified at wastewater treatment facilities around the world. The results concluded that it was unlikely that the levels of contaminants in the wastewater would be pose a significant risk to beluga whales in Cook Inlet.

Overall Environmental Benefit Study, Oremet-Wah Chang, Albany, Oregon. Conducted study to evaluate the effects of Oremet-Wah Chang's (OWC) wastewater discharge on water quality and aquatic communities within Oak Creek, and to demonstrate that the discharge provides an overall environmental benefit. The study was provided to DEQ under the Alternative Mixing Zone Rule [OAR 340-041-0445(4)(g)(A)] to allow an extended mixing zone as part of OWC's NPDES permit renewal. Responsible for modeling instream concentrations in Oak Creek and the Calapooia River for chemicals monitored under OWC's current NPDES permit and a comparison of the concentrations with benchmark values known to be protective of aquatic life. Also responsible for assessing potential bioaccumulation of chemicals of concern, providing statistical comparisons of benthic macroinvertebrate populations within Oak Creek and identified reference creeks using DEQ's Stream Macroinvertebrate Protocol, and completing aquatic habitat evaluations.

Hickam Air Force Base, Oahu, Hawaii. Mr. Schut conducted ecological risk assessments for the Air Force at Hickam Air Force Base in Oahu, Hawaii under their Installation Restoration Program. The

Base has three major canals that convey the surface runoff from the Base into offsite estuarine/marine waters. The ecological risk assessment was conducted using a tiered process. These water bodies were feeding areas for the endangered Hawaiian stilt and there was high stakeholder interest. As part of the negotiations process, the ecological risk assessment was limited to areas in the lower reaches of the canals with moderate or high habitat value. Chemical of potential ecological concern included pesticides, polycyclic aromatic hydrocarbons, and metals. Food-web modeling was conducted to evaluate the potential risk to the Hawaiian stilt. Using multiple lines of evidence, including bioassay results, sediment and water concentration data, biota tissue residue data, food-web modeling, comparison with an off-Base reference area, and comparison with other regional canals, the risk assessment results were used to support a recommendation for a no further action decision. Site-specific biologically-based information was used as an alternative to conservative default risk screening parameters resulting in considerable cost savings in sediment remediation at the canals.

Former Chevron Products Company, Port Arthur, Texas. Conducted baseline ecological risk assessments for five upland units and the Joint Outfall Canal (JOC). The JOC is a 4-mile-long regionally managed, stormwater drainage canal. The ecological risk assessment included evaluations of potential risk for benthic receptors and aquatic/epibenthic receptors in the JOC and terrestrial/avian receptors along the banks. A tiered ecological risk assessment approach was used to evaluate potential risks from contaminants in soils, groundwater, sediments, and surface water. As part of Tier I, Mr. Schut developed risk-based ecological benchmarks to evaluate the extent of contamination and to identify chemicals of potential concern. Subsequent tiers of the risk assessment evaluated bioavailability of chemicals, dynamics of the ecological populations, and distributions of chemical concentrations to evaluate the potential risks.

Weyerhaeuser, Klamath Falls, Oregon. Mr. Schut led the baseline human health and ecological risk assessments under the State of Oregon's Voluntary Cleanup Program. He led agency negotiations throughout the project. For the ecological risk assessment, he used multiple lines of evidence, including bioassay results, sediment concentration data, upland and instream food-web modeling, and comparisons with reference data. The risk assessment results were used to support a recommendation for a no further action decision in the river. The results of the upland evaluation indicated that no site-related chemicals onsite posed unacceptable risk to human health and the environmental. However, elevated TPH concentrations onsite were determined to pose a potential future risk through the mobilization of naturally-occurring metals in soils. The primary chemicals of concern at the site included pentachlorophenol, PAHs, PCBs, and metals.

Reynolds Metals, Troutdale, Oregon. Conducted baseline human health and ecological risk assessment using a tiered approach to evaluate the potential risks to humans as well as terrestrial and aquatic ecological receptors exposed to contaminated surface water, groundwater, sediment, and soils. In addition to direct ingestion of those media, potential transfer of contaminants through the food chain is evaluated for ecological receptors. As part of the ecological investigation, site-specific bioaccumulation data for polycyclic aromatic hydrocarbons (PAHs) and fluoride and an inexpensive biological extraction procedure to estimate the bioavailability of inorganic compounds in soils were used.

Hanford 200-CW-1, 200-CW-3, and U Plant Closure Area, Hanford, Washington. Conducted baseline and screening-level ecological risk assessments as part of waste site closure. The approach evaluated potential exposure and risk to wildlife (mammals/birds, terrestrial invertebrates, and vegetation) at selected representative waste sites. Remedial actions were recommended for analogous sites that historically received similar waste. Guidance from USEPA, U.S. DOE, and the State of Washington were used collectively to evaluate the potential risks to ecological receptors. Both nonradiological and radiological exposures through direct contact, incidental ingestion, inhalation of dust, and transfer of contaminants through the food chain were evaluated. As part of these assessments, Mr. Schut used increasingly complex levels of the U.S. DOE's RESRAD-BIOTA model to estimate site-specific risk of radionuclides to potential ecological receptors. Additionally, Mr. Schut coordinated consensus

agreements between the U.S. DOE and the state regulators.

Spring Creek Arm of Keswick Reservoir, Iron Mountain Mine CERCLA Site, U.S. Environmental Protection Agency, Shasta County, California. Mr. Schut prepared an updated human health and ecological risk assessment for contaminated sediments in the Spring Creek Arm of Keswick Reservoir as part of a RI/FS. Contamination originating from the Iron Mountain Mine CERCLA site. Historical releases of metals from Spring Creek resulted in the accumulation of more than 250,000 cubic yards of contaminated sediment in the reservoir.

Johnston Island, Pacific Ocean. These activities supported risk management decisions for site closure, remedy selection, and developing cleanup levels. Mr. Schut estimated the exposure and risk to the endangered monk seal (*Monachus schauinslandi)* and their prey under several existing and hypothetical future exposure scenarios. The results led to a decision for monitored natural attenuation of dioxins/furans and PCBs in island sediments and biota. A follow-on Monitored Natural Recovery (biomonitoring) investigation in 2008 evaluated the potential exposures and risks to aquatic, avian, and mammalian wildlife, including food-web exposure to the monk seal. The evaluation considered the foraging area and visitation times in the characterization of risk to the monk seal, concluding that it is unlikely that the monk seal would actually experience unacceptable risk for these lagoon areas.

Boise Cascade, Salem, Oregon and Vancouver, Washington. As an alternative to traditional TPH quantification and risk evaluation methods, Mr. Schut used volatile petroleum hydrocarbon (VPH) and extractable petroleum hydrocarbon (EPH) methods to develop site-specific risk cleanup levels. The development of these more realistic cleanup levels prevented unnecessary cleanup and resulted in significant savings for the client.

Malmstrom Air Force Base, Malmstrom, Montana. Mr. Schut was the lead ecological risk assessor for a Phase III RCRA Facility Investigation at landfill site LF-19, where shallow groundwater contaminated by a closed landfill. The landfill waste evaluated included petroleum-contaminated soils, waste drums containing solvents, pesticides, oils, and acids, and coal fly ash. The risk assessment was conducted in accordance with Montana DEQ's *Voluntary Cleanup and Redevelopment Act Application Guide.*

Union Pacific Railroad, Multiple Sites, Oregon and Idaho. Conducted several ecological risk assessments using the Oregon and Idaho DEQs' risk assessment guidance to evaluate the potential risks to human health and ecological receptors exposed to contaminated groundwater, surface water, sediment, and soil. Completed risk assessments at the UPRR sites in Hinkle (OR), La Grande (OR), Eugene (OR), Huntington (OR), Wyeth (OR), Tigard (OR), Nampa (ID), Pocatello (ID), and Portland (OR- St. Johns and Albina), which included site reconnaissance visits to identify where complete exposure pathways are absent and complete. Additionally, Mr. Schut used site-specific clam tissue data at Wyeth to assess the potential risk of zinc and PAHs to aquatic life in the Columbia River. He also was responsible for initial spill response documentation near Oakridge (OR), Huntington (OR), and Weiser (ID).

U.S. Dept. of Defense (DOD) Clients, Multiple Sites. Conducted human health and ecological risk analyses at many DOD sites, including Malmstrom AFB (MT), Havre Air Force Station (MT), Fort Wainwright (AK), Beale AFB (CA), Hickam AFB (HI), AFB Plant 42 (CA), Johnston Island AFB (South Pacific), Kelly AFB (TX), Granite Mountain Radio Relay Station (AK), Kalakaket Radio Relay Station (AK), Bethel Radio Relay Station (AK), Wake Island (South Pacific), Adak Island Naval Air Facility (AK), and Bellows Air Force facilities (AK). These assessments considered all environmental media contaminated with mixtures of petroleum fuels, metals, solvents, munitions compounds, dioxins and furans, polychlorinated biphenyls, pesticides, and PAHs.

Basin Watershed OU2, Basin, Montana. Mr. Schut conducted a screening level risk assessment for potable water supplies under current or potential future residential use scenarios. The investigation included a survey of active wells or surface water sources in the watershed. Sample results indicated that drinking water sources chosen by residents contained low levels of metals, in spite of the multiple historic mine sites and waste distributed throughout the watershed. The screening level risk assessment confirmed the low risk to the residents.

Honeywell International, Pittsburg, CA. Mr. Schut conducted ecological and human health risk assessments for the Bay Point Property in Pittsburg,

CA. The risk assessment evaluated the potential exposures and risks posed from four source areas of concern encompassing approximately 35 acres out of a total Honeywell property holding of 94.1 acres: the former alum mud pond, inactive solid waste disposal area, former gypsum stockpile area, and former hydrofluoric acid plant. Suisun Bay, a tidal mixing zone where fresh water from the Sacramento River Delta mixes with salt water from the San Francisco Bay, is generally less than 300 feet from the property. As a result, the potential for groundwater migration to nearby surface water was a focus of the project.

Taylor Lumber Treating Facility, Sheridan, Oregon. Mr. Schut lead the ecological risk assessment for a former wood-treating site in Sheridan, Oregon, where historical releases of creosote, chromated copper arsenate (CCA), chlorinated phenols, and dioxins/furans have occurred. The project focused on identifying the potential human and ecological risks associated with releases to groundwater and soil and to media in nearby Rock Creek and the South Yamhill River.

Sediment Investigation, Rhodia, Portland, Oregon. Mr. Schut conducted a sediment investigation and Additional Measures Study (AMS) to gather information for use in selecting a remedial action for impacted sediments in the Oregon Slough portion of the Columbia River adjacent to the Rhodia Inc. facility. Mr. Schut was responsible for developing a sampling plan, conducting sediment sampling, characterizing sediment migration, and assessing the risk to human and ecological receptors potentially exposed to the contaminated sediments. As a result of this investigation, a scour-resistant sediment cap was approved as a remedial action for DDT-contaminated sediment in the Oregon Slough portion of the Columbia River.

Northwest Aluminum, The Dalles, Oregon. Mr. Schut served as the lead human health and ecological risk assessor for the completion of risk assessments at The Dalles facility. He conducted additional statistical analyses to support decisions on remedial actions that were determined to be necessary to reduce potential exposures to residual contaminants in soil.

Biography

Mr. Jeff Wilson is an environmental engineer with Gravity Consulting LLC, specializing in supporting sediment and aquatic resource studies. His employer, Gravity Consulting, specializes in the implementation of aquatic field studies and has developed considerable proprietary technology for the collection and analysis of water and sediment samples. Although Gravity is less than 10 years old, its staff have been involved in more than 100 geotechnical, oceanographic and environmental field studies.

Mr. Jeff Wilson is an environmental engineer with Gravity specializing in sediment and aquatic resource studies. Mr. Wilson provides sediment transport and hydrodynamic modeling support. He has participated in most phases of research studies from the initial design stages to implementation, data collection, analysis and reporting. He is experienced and effective both in implementation of sampling designs and efficient, sound data collection in the field. Mr. Wilson is Gravity's GIS and CAD lead and has extensive mapping and positioning system experience. His cross-skills of both engineering and field implementation make Mr. Wilson a critical member of the Gravity Team.

Mr. Wilson has assisted in the implementation of many projects in the aquatic environs and the QA/QC of environmental monitoring data. He has experience with technical writing and is skilled at presenting technical concepts to both scientific and general audiences.

Representative Project Experience

Broader Gulf of Mexico Water Column Study (2010-ongoing)
Mr. Wilson served as a lead scientist aboard four vessels participating in multi-vessel cruises to investigate potential water column impacts resulting from the Deepwater Horizon spill incident in the Gulf of Mexico. Mr. Wilson was involved in the real-time evaluation of the data and the subsequent adaptive changes to operations to improve the monitoring effort as cruises progressed. This work is focused on modeling the fate and transport of the oil plume and the natural resource damage assessment.

Upper Columbia River Surface Water Sampling
Field scientist for surface water testing on the Upper Columbia River to evaluate impacts of mining operations on human and ecological health risk. Managed HydroLab sensors and data collection as well as assistance with water sampling protocol. The Upper Columbia River Surface Water sampling is a part of a multi-year study that is being done in corroboration with EPA, local tribes, and USGS.

Lower Passaic River Benthic Community Study
Mr. Wilson served as field scientist during a benthic community sampling effort on the Lower Passaic River Super Fund site studying the potential effects of high levels of contamination on benthic macro-invertebrate communities. Mr. Wilson was in charge of sample collection and assisted in field protocol implementation.

San Jacinto River Sediment Characterization
Served as field scientist for the San Jacinto Sediment Characterization, located within the San Jacinto Superfund site near Baytown, Texas where Mr. Wilson assisted with a multi-tiered sediment sampling effort. The investigative sediment sampling involved surface grab sampling, beach sediment sampling, and sediment cores up to 12 feet with a Rotary Impact Coring device.

Upper Columbia River Beach Sediment Sampling
Field scientist for beach sediment sampling on Upper Columbia River to evaluate impacts of mining operations on human and ecological health risk. Assisted in sample collection, processing and QA/QC management. The Upper Columbia River beach sediment sampling is a part of a multi-year study that is being done in corroboration with EPA, local tribes, National Parks Service and USGS.

Upper Columbia River White Sturgeon Study
Field scientist for sediment sampling on Upper Columbia River to evaluate impacts of mining operations on the success rates of White Sturgeon reproduction. The Upper Columbia White Sturgeon sediment sampling is a part of a multi-year study that is being done in corroboration with EPA, local tribes, National Parks Service, University of Saskatchewan and USGS.

Port of Seattle East Waterway Sediment Flume Sampling
Mr. Wilson served as field scientist for a for a sediment erosion study for the Port of Seattle. This project included both the research and development and project implementation of a custom sediment sampling device invented by Gravity Consulting LLC for collecting undisturbed sediment cores.

Upper Columbia River Sediment Sampling
Served as field scientist for an investigative sediment sampling effort locating the sources and depositional areas of contamination from mining practices along the Upper Columbia River. Mr. Wilson assisted in sample collection and processing.

Port of Tacoma Post-Dredge Investigative Sampling
Mr. Wilson served as field scientist for an investigative sediment coring effort for the Army Corp of Engineers in the Port of Tacoma. Sampling investigated the success of a dredging project to remove contaminated sediment.

South Lake Washington Boeing Facility Habitat Restoration Investigation
Field scientist for feasibility study of restoration efforts on South Lake Washington Boeing facility shoreline. Both surface samples and sediment cores were taken to assess the effect of a flume barrier on the leaching of contaminants into Lake Washington.

Education

University of Washington ***Seattle, WA***
M.S. in Civil and Environmental Engineering—Hydraulics and Water Resources

University of Washington ***Seattle, WA***
B.S. in Biology w/ minor in Environmental Science and Resource Management

Employment History

Gravity Consulting, LLC **Seattle, WA**
Senior Environmental Engineer
- Engineering analysis and support of geotechnical and environmental projects
- Design of dredge analysis, sediment transport and environmental studies

OTAK, Inc. **Seattle, WA**
Water Resources Engineer
- Engineer and design lead for stormwater and open channel systems
- Performed hydrologic and hydraulic modeling for conveyance and restoration design

Integral Consulting, Inc. **Seattle, WA**
Water Quality Scientist
- Serve as on-call science lead for Broader Gulf of Mexico water column investigation
- Participate in data collection, operation of instruments, personnel management and technical reporting

Certifications and Skills
- TWIC, OSHA 40 hour HAZWOPER, EPA Clean Sampling Certified, CPR
- AutoCAD, Civil 3D, ArcGIS, WWHM, XPSWMM, PCSWMM, HY-8, KCRTS, Matlab, Stella