**University of Idaho Budget Justification:**

1. **Senior Personnel**

PI Tranmer is an assistant research professor. The hourly rate for the PI is estimated to be $53.26 when the performance period begins. Each year he will receive support from this project for 1.85 person-months (320 hours) of academic year research to manage and participate in experiments, oversee fieldwork, advise the graduate student, manage the budget, and participate in outreach activities. No funds for summer salary support are requested. There is a 3% salary rate increase in years two and three for this faculty member for expected cost-of-living increases proposed by the administration. Per Chapter II.C.2.g(i)(a), of the FY 2020 PAPPG (Senior Personnel Salaries & Wages Policy), the Regents of the University of Idaho have determined the definition of salary year to be based on a calendar year.

1. **Other Personnel**

One graduate research assistant (PhD student) will be employed as a full-time student with an hourly salary of $25/hr ($26,000/yr in year one). The salary rate for the PhD student will increase at 5% each year based on local cost-of-living expenses in Boise, Idaho. The PhD student will spend 780 hours during each academic year and 260 hours in the summer devoted to this project. The PhD student will perform experiments and fieldwork, analyze data, and prepare journal articles for publication. Two undergraduate students will be employed in year one to help with fieldwork and lab operations in Idaho. The first student will spend 200 hours helping in the field in the summer and 200 hours helping in the lab during the semester. The second student will spend 200 hours only helping with summer fieldwork. One undergraduate student will be hired for 320 hours in year two at a rate of $15/hr to assist in the laboratory experiments in S. Korea during the summer. These undergraduate positions will help with the flume experiments, field measurements, and data processing. Total student salaries for year 1 is $35,000, year 2 is $32,100, and year 3 is $28,665.

The lab engineer is a staff member that will spend 120 hours training the student on how to use the flume equipment at CER in Boise and the safety protocols in the laboratory. The total salary for all staff in year 1 is $4,841.

**Fringe Benefits**

These fringe rates are listed as the projected FY23 rates that are pending approval from DHHS. The University of Idaho FY23 fringe rate agreement was submitted to DHHS in December 2021 but has not yet been approved by DHHS. If selected for funding, if the rate agreement is not approved at the time of award, the approved (not projected) rates will be utilized. Those fringe benefit rates are 29.4% for the faculty member is, 40.8% for staff, and is 3.0% for all graduate and undergraduate students.

1. **Equipment**

N/A

1. **Travel**
2. Domestic travel support for fieldwork is $11,850 for year one to cover 5 weeks of field surveys in the summer. This constitutes $1,475 for field vehicle use fee, $1,200 as estimated fuel costs, $7,375 for per diem for 5 people, and $1,800 for camping and hotel fees. Further domestic travel support in the amount of $4,090 is requested in years two and three for PI Tranmer and the PhD student to present at AGU. AGU travel costs for 2 people cover accommodation ($1,440), transportation ($1,000), per diem ($500), and conference registration fees ($2,300). An additional $400 each year in years two and three will cover transportation ($100), per diem ($100), and accommodation ($200) for Dr. Lynch (see letter of collaboration) to travel from Moscow to Boise for the summer science camp. She will present to the kids and bring the portable water quality lab for field trips. Total combined domestic travel is $11,850 for year one and $4,490 each for years two and three. Other presentations listed in the proposal to disseminate the project findings will be local and not incur expenses from the sponsor.
3. International travel support for REC experiments in South Korea is requested as $20,120 in year two for 4 people (PI Tranmer, PhD student, undergraduate student, and 8th grade science teacher). This includes transportation ($11,200), extra baggage costs ($200), internal transport within Korea ($800), extra accommodation outside of those offered by the REC free of cost to visiting researchers ($1,200) and per diem ($6,720) for 8 weeks. Total international travel costs in year 3 are $6,900 for the PhD student and PI Tranmer to present at the Andong River Experimental Forum conference. It is an expectation that all international and Korean national researchers participating in research activities in the REC facility be present. These costs cover transportation ($5,600), internal transport within Korea ($200), extra accommodation outside of those offered by the REC free of cost to visiting researchers ($800) and per diem ($300) for 5 days.

Total combined travel costs for this project are $47,850.

1. **Participant Support Costs**

Participant support costs are requested for years 2 and 3. Each year, a total of $2,300 will cover camp stipends for underprivileged kids ($1,000), outreach supplies for 20 kids ($900), and bus rental to move kids and instructors from the classroom to the field trip location sites ($400). Outreach supplies for kids will include a field notebook, pen, riparian plant identification book, and dissection kit that will not exceed $45/kid. Total participant support costs are $4,600.

1. **Other Direct Costs**
2. Equipment <$5K
   * Total costs = $4,850
     + $3,200 to cover 1 computer each for PhD student and PI Tranmer for photogrammetry analysis at $1,600 per computer.
     + $500 to fabricate downscaled TR2 bedload sampler
     + $650 for laser rangefinder for large patch field measurements
     + $150 for 2 gravelometers to measure GSD in field
     + $350 for 2 SSD hard drives for data transfer and backup in Korea
3. Materials and Supplies

These are confirmed current market rates for supply expenses that can vary based on field conditions and lab requirements. Any unused funds will be used for project outcomes. Most laboratory supplies for experiments in S. Korea will be provided by the REC (please see REC letter of support and Facilities, Equipment, and Other Resources section for details), but some small supplies will be covered by the PI. Total materials and supplies costs for the project are $7,750.

* Total year one = $5,350 for:
* $850 is anticipated for assorted field supplies to fabricate a vegetation submergence tank, basic tools, ropes, field notebooks, etc.
* $600 for students’ waders and boots during fieldwork
* $3,900 is anticipated for assorted lab supplies to construct a false flume floor for mounting cylinder arrays, purchase and shipping of sediment to the lab, mounting brackets on the instrument cart
* Total year two = $2,650 for:
* $2,400 is anticipated for assorted lab supplies in Korea
* $250 will cover outreach lab supplies for summer science camp
* Total year three = $0

1. Publication Costs/Documentation for expected open access requirements on federal grants
   * Total year two = $2,900
   * Total year three = $2,900
2. Consultant Services

N/A

1. Computer (ADPE) Services

N/A

1. Software

$600 for an academic license for Agisoft Metashape software to process photogrammetry data.

1. Other
   * $6,000 will cover the CER user fee for the flume for 12 weeks ($500/week).
   * No facility use fees will be charged by the REC for this project.
   * Science teacher stipends will be requested each year to support middle school teachers participate in research and outreach activities. In year 1, a $5,000 teacher stipend will cover the costs of the 8th grade science teacher to participate in fieldwork and research activities as well as co-develop the summer camp curriculum with PI Tranmer. The stipend accounts for 5 full weeks of living support at $25/hr. In year 2, a similar stipend of $5,000 for the 8th grade science teacher to participate in the lab experiments in S. Korea and help run the summer science camp. An additional stipend of $625 for a teacher assistant ($25/hr) to help run the science camp for a total of 25 hours. Combined costs for year 2 are $5,625. In year 3, a $5,000 stipend for the 8th grade science teacher to help run the summer science camp as well as synthesize the project research findings and summer camp educational materials into a curriculum for two week class module on aquatic ecology. An additional stipend of $625 for a teacher assistant ($25/hr) to help run the science camp for a total of 25 hours. Combined costs for year 3 are $5,625.
   * Graduate tuition/fees for the PhD student are $12,981 in year one, $14,279 in year two, and $15,707 in year three. There is an expected 10% increase each year for tuition/fees. These costs include AY tuition, 1 summer research credit, and student health insurance each year. No F&A is charged on GRA tuition and fees.
2. **Total Direct Costs (A through G)**

Total direct costs for this project are $311,538.

1. **Indirect Costs**

Modified total direct costs consist of all salaries and wages, fringe benefits, materials, supplies services, travel and subgrants up to the first $25,000. Modified total direct costs exclude equipment greater than $5,000, capital expenditures, student tuition remission, rental costs of off-site facilities, scholarships, and fellowships as well as the portion of each subgrant and subcontract in excess of $25,000. The federally negotiated F&A rate for UI is 50%. The University of Idaho rate agreement can be viewed here: https://www.uidaho.edu/research/faculty/resources/f-and-a rates.

The modified total direct costs are $263,972. Applying the 50% F&A rate, the total indirect costs are $131,987 and the total budget for this project is $443,525.