



The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner



October 10, 2017

His Excellency, Governor Christopher T. Sununu
and the Honorable Council
State House
Concord, New Hampshire 03301

REQUESTED ACTION

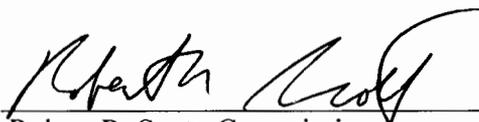
Authorize the New Hampshire Department of Environmental Services (NHDES) to **RETROACTIVELY** amend a **SOLE SOURCE** contract (PO # 1055106) with HYSR, Dartmouth, MA (VC# 277908) to calculate long-periods of daily stream flow records at ungauged locations in New Hampshire by extending the project end date to March 31, 2018 from September 30, 2017; effective upon approval by Governor and Council. The original agreement was approved by G&C on April 5, 2017 as Item No. 26. 100% General Funds. This is a no cost time extension.

EXPLANATION

This contract is **SOLE SOURCE** because Dr. Neil Fennessey of HYSR, is the developer of the QPPQ Transform Method for calculating stream flows at ungauged locations. This method has been widely tested and adopted by the United States Geological Survey (USGS) throughout the eastern and southeastern United States. As such, Dr. Fennessey is uniquely qualified to test this approach on New Hampshire stream flow data. This is a **RETROACTIVE** request because it was found late in the process of building the multi-variate regression equations for each parameter that a new statistical software package had to be applied since the older software used in the earlier regression analysis could not handle so many variables. The contractor was late in notifying the department of the delay in the software which resulted in this untimely extension request. To date, no funds have been expended.

The Instream Flow Program requires long periods of daily stream flow data to be able to establish protected instream flow criteria. Unfortunately, many of the designated rivers lack streamflow gages. The QPPQ Transform Method serves as a way of calculating long periods of daily streamflow records for river systems that lack long-term data. A no cost time extension is required because of the complexity of compiling flow datasets. The datasets require compiling dozens of independent variables for the vast streamgage network. This activity is labor intensive and could easily result in a mistake. Given that this project is considered a "proof of concept," it is necessary to take the additional time, and utilize the updated software, to ensure that the process will be accurate for state use.

The contract has been approved by the Department of Justice as to form, substance and execution. We respectfully request your approval.


Robert R. Scott, Commissioner

Agreement for Services with HYSR
Amendment No. 1

This Agreement (hereinafter called "Amendment No. 1") is by and between the State of New Hampshire, acting by and through its Department of Environmental Services (hereinafter referred to as the "State") and HYSR (hereinafter referred to as the "Contractor").

WHEREAS, pursuant to a Contract Agreement (hereinafter called the "Agreement") approved by the Governor and Council on April 5, 2017 (Item #26), the Contractor agreed to perform certain services upon the terms and conditions specified in the Agreement, and in consideration of payment by the State of certain sums as specified therein, effective April 5, 2017 through September 30, 2017, and;

WHEREAS, the Contractor and the State have agreed to amend the Agreement in certain respects;

NOW THEREFORE, in consideration of the foregoing, and the covenants and conditions contained in the Agreement, and set forth herein, the parties do hereby agree as follows:

- 1) Amendment and Modification of the Agreement: The Agreement is hereby amended as follows:
 - (A) The Completion Date as set forth in Item 1.7 of the Agreement shall be changed from September 30, 2017 to March 31, 2018.
- 2) Effective Date of Amendment: This amendment shall take effect upon the date of approval of this Amendment by the Governor and Executive Council of the State of New Hampshire.
- 3) Continuance of Agreement: Except as specifically amended and modified by the terms and conditions of this Amendment, the Agreement, and the obligations of the parties thereunder, shall remain in full force and effect in accordance with the terms and conditions set forth therein.

Contractor Initials NMF
Date 9/28/17

IN WITNESS WHEREOF, the parties have hereunto set their hands as of the day and year first above written.

HYSR.

By Neil M. Fennessey
Neil M. Fennessey Ph.D., Owner

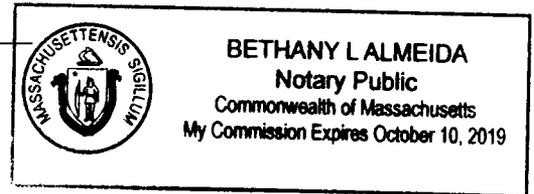
COMMONWEALTH OF MASSACHUSETTS
COUNTY OF BRISTOL

On this the 20th day of September, 2017, before the undersigned officer, personally appeared Neil M. Fennessey who acknowledged himself to be the person who executed the foregoing instrument for the purpose therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Bethany L Almeida

My Commission Expires: 10/10/2019



THE STATE OF NEW HAMPSHIRE
Department of Environmental Services

By Robert R. Scott
Robert R. Scott, NHDES Commissioner

Approved by Attorney General this 13 day of October, 2017

OFFICE OF ATTORNEY GENERAL

By [Signature]



State of New Hampshire
Department of State



CERTIFICATE OF REGISTERED TRADE NAME

OF

HYSR

This is to certify that **Neil M. Fennessey Ph.D.** registered in this office as doing business under the Trade Name **HYSR** at **49 School St., Dartmouth, MA, 02748, USA** on **02/03/2017**.

The nature of business is **Professional, Scientific, and Technical Services / Environmental Consulting Services**, in New Hampshire.

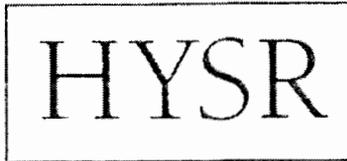
Expiration Date: **02/03/2022**

Business ID: **764128**



IN TESTIMONY WHEREOF, I hereto
set my hand and cause to be affixed
the Seal of the State of New Hampshire,
this 3rd day of February, 2017 A.D.

William M. Gardner
Secretary of State



February 27, 2017

To: Mr. Wayne C. Ives, P.G.
Instream Flow Specialist
New Hampshire Department of Environmental Services
29 Hazen Driver
Concord, NH 03301

Subject: **Worker's Compensation Insurance**

Dear Mr. Ives;

This letter will serve as notice that the study proposed by HYSR for the NH DES does not require Worker's Compensation Insurance. According to N.H. RSA **Chapter 281-A Workers' Compensation** "Sole-proprietors, partners and self-employed persons are not required to carry workers' compensation on themselves but may elect to be covered, per RSA 281-A:3."

HYSR is a sole proprietorship business with no employees or subcontractors. Dr. Neil M. Fennessey alone will be conducting the proposed study.

HYSR's state of New Hampshire business ID number is 764128 and HYSR's account number is 03-44-44-442010-1518-102

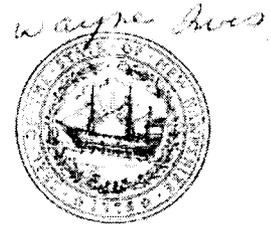
Sincerely,

A handwritten signature in black ink, appearing to read "Neil M. Fennessey".

Neil M. Fennessey, Ph.D.



The State of New Hampshire
Department of Environmental Services



Clark B. Freise, Assistant Commissioner

March 7, 2017

APPROVED G & C

His Excellency, Governor Christopher T. Sununu
and The Honorable Council
State House
Concord, New Hampshire 03301

DATE 4/5/17
ITEM # 26

REQUESTED ACTION

Authorize the New Hampshire Department of Environmental Services (NHDES) to enter into a **SOLE SOURCE** contract with HYSR, Dartmouth, MA (VC# 277908) in the amount of \$30,000 to complete the *QPPQ Proof of Concept Project* for the purpose of enhancing the QPPQ Transform Method to calculate long-period daily stream flows at ungaged river locations in New Hampshire, effective upon Governor and Council approval through September 30, 2017. 100% General Funds.

Funding is available in the following account:

03-44-44-442010-1518-102-50731 FY 2017
Department of Environmental Services, Lakes-Rivers Management, Contracts for Program Services \$30,000

EXPLANATION

This contract is **SOLE SOURCE** because Dr. Neil Fennessey of HYSR, is the developer of the QPPQ Transform Method for calculating stream flows at ungaged locations. This Method has been widely tested and adopted by the United States Geological Survey (USGS) throughout the eastern and southeastern United States. Other stream flow calculation methods have proven to be less accurate or require extensive validation and expense. The New Hampshire Instream Flow Program, which is required by RSA 483 to determine protected instream flow criteria for designated rivers, currently requires long periods of daily stream flow data to be able to establish protected instream flow criteria. Unfortunately, many of the designated rivers lack streamflow gages that provide daily records. The QPPQ Transform Method serves as a way of calculating long periods of daily streamflow records for river systems that lack long-term data.

Developed in 1994, the QPPQ Transform Method will be improved by updating the regional streamflow duration model upon which it is based. The updated version will be verified for use in New Hampshire by comparison of the method's calculated results to existing flow data at state stream flow gages. HYSR proposes to demonstrate that the QPPQ Transform Method would serve NHDES's needs by applying it at five USGS stream gage sites in New Hampshire on rivers of varying watershed sizes and regional locations. The QPPQ-calculated flow results will be compared to the measured flows at the five river locations each having existing long period stream flow data. This comparison will provide a statistical analysis to quantify how well the QPPQ-calculated flow data matches the measured flow data, particularly within the flow range that is important for

His Excellency, Governor Christopher T. Sununu
and the Honorable Council
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assessing protected instream flow criteria. Following the completion of HYSR's project, NHDES will be better able to assess the effectiveness of using calculated stream flow data to develop protected instream flows on ungaged designated rivers.

This contract has been approved by the Office of the Attorney General as to form, substance, and execution.

We respectfully request your approval:



Clark B. Freise, Assistant Commissioner

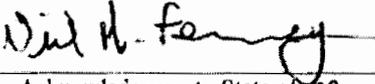
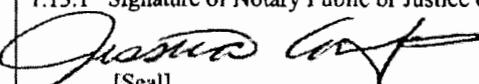
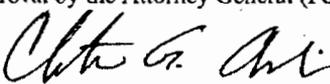
Notice: This agreement and all of its attachments shall become public upon submission to Governor and Executive Council for approval. Any information that is private, confidential or proprietary must be clearly identified to the agency and agreed to in writing prior to signing the contract.

AGREEMENT

The State of New Hampshire and the Contractor hereby mutually agree as follows:

GENERAL PROVISIONS

1. IDENTIFICATION.

1.1 State Agency Name New Hampshire Department of Environmental Services		1.2 State Agency Address 29 Hazen Drive Concord, NH 03301	
1.3 Contractor Name HYSR		1.4 Contractor Address 49 School Street, Dartmouth, MA 02748	
1.5 Contractor Phone Number (508) 996-4505	1.6 Account Number 03-44-44-442010-1518-102	1.7 Completion Date September 30, 2017	1.8 Price Limitation \$30,000
1.9 Contracting Officer for State Agency Wayne Ives, Instream Flow Specialist		1.10 State Agency Telephone Number 603-271-3548	
1.11 Contractor Signature 		1.12 Name and Title of Contractor Signatory Neil M. Fennessey Ph.D., Owner	
1.13 Acknowledgement: State of <u>Massachusetts</u> , County of <u>Bristol</u> On <u>03/01/2017</u> , before the undersigned officer, personally appeared the person identified in block 1.12, or satisfactorily proven to be the person whose name is signed in block 1.11, and acknowledged that s/he executed this document in the capacity indicated in block 1.12.			
1.13.1 Signature of Notary Public or Justice of the Peace  [Seal]			
1.13.2 Name and Title of Notary or Justice of the Peace			
1.14 State Agency Signature  Date: <u>3/7/17</u>		1.15 Name and Title of State Agency Signatory <u>CLARK B. FREISE, Assistant Commissioner</u>	
1.16 Approval by the N.H. Department of Administration, Division of Personnel (if applicable) By: _____ Director, On: _____			
1.17 Approval by the Attorney General (Form, Substance and Execution) (if applicable) By:  On: <u>3/16/2017</u>			
1.18 Approval by the Governor and Executive Council (if applicable) By: _____ On: _____			

2. EMPLOYMENT OF CONTRACTOR/SERVICES TO BE PERFORMED. The State of New Hampshire, acting through the agency identified in block 1.1 ("State"), engages contractor identified in block 1.3 ("Contractor") to perform, and the Contractor shall perform, the work or sale of goods, or both, identified and more particularly described in the attached EXHIBIT A which is incorporated herein by reference ("Services").

3. EFFECTIVE DATE/COMPLETION OF SERVICES.

3.1 Notwithstanding any provision of this Agreement to the contrary, and subject to the approval of the Governor and Executive Council of the State of New Hampshire, if applicable, this Agreement, and all obligations of the parties hereunder, shall become effective on the date the Governor and Executive Council approve this Agreement as indicated in block 1.18, unless no such approval is required, in which case the Agreement shall become effective on the date the Agreement is signed by the State Agency as shown in block 1.14 ("Effective Date").

3.2 If the Contractor commences the Services prior to the Effective Date, all Services performed by the Contractor prior to the Effective Date shall be performed at the sole risk of the Contractor, and in the event that this Agreement does not become effective, the State shall have no liability to the Contractor, including without limitation, any obligation to pay the Contractor for any costs incurred or Services performed. Contractor must complete all Services by the Completion Date specified in block 1.7.

4. CONDITIONAL NATURE OF AGREEMENT.

Notwithstanding any provision of this Agreement to the contrary, all obligations of the State hereunder, including, without limitation, the continuance of payments hereunder, are contingent upon the availability and continued appropriation of funds, and in no event shall the State be liable for any payments hereunder in excess of such available appropriated funds. In the event of a reduction or termination of appropriated funds, the State shall have the right to withhold payment until such funds become available, if ever, and shall have the right to terminate this Agreement immediately upon giving the Contractor notice of such termination. The State shall not be required to transfer funds from any other account to the Account identified in block 1.6 in the event funds in that Account are reduced or unavailable.

5. CONTRACT PRICE/PRICE LIMITATION/PAYMENT.

5.1 The contract price, method of payment, and terms of payment are identified and more particularly described in EXHIBIT B which is incorporated herein by reference.

5.2 The payment by the State of the contract price shall be the only and the complete reimbursement to the Contractor for all expenses, of whatever nature incurred by the Contractor in the performance hereof, and shall be the only and the complete compensation to the Contractor for the Services. The State shall have no liability to the Contractor other than the contract price.

5.3 The State reserves the right to offset from any amounts otherwise payable to the Contractor under this Agreement those liquidated amounts required or permitted by N.H. RSA 80:7 through RSA 80:7-c or any other provision of law.

5.4 Notwithstanding any provision in this Agreement to the contrary, and notwithstanding unexpected circumstances, in no event shall the total of all payments authorized, or actually made hereunder, exceed the Price Limitation set forth in block 1.8.

6. COMPLIANCE BY CONTRACTOR WITH LAWS AND REGULATIONS/ EQUAL EMPLOYMENT OPPORTUNITY.

6.1 In connection with the performance of the Services, the Contractor shall comply with all statutes, laws, regulations, and orders of federal, state, county or municipal authorities which impose any obligation or duty upon the Contractor, including, but not limited to, civil rights and equal opportunity laws. This may include the requirement to utilize auxiliary aids and services to ensure that persons with communication disabilities, including vision, hearing and speech, can communicate with, receive information from, and convey information to the Contractor. In addition, the Contractor shall comply with all applicable copyright laws.

6.2 During the term of this Agreement, the Contractor shall not discriminate against employees or applicants for employment because of race, color, religion, creed, age, sex, handicap, sexual orientation, or national origin and will take affirmative action to prevent such discrimination.

6.3 If this Agreement is funded in any part by monies of the United States, the Contractor shall comply with all the provisions of Executive Order No. 11246 ("Equal Employment Opportunity"), as supplemented by the regulations of the United States Department of Labor (41 C.F.R. Part 60), and with any rules, regulations and guidelines as the State of New Hampshire or the United States issue to implement these regulations. The Contractor further agrees to permit the State or United States access to any of the Contractor's books, records and accounts for the purpose of ascertaining compliance with all rules, regulations and orders, and the covenants, terms and conditions of this Agreement.

7. PERSONNEL.

7.1 The Contractor shall at its own expense provide all personnel necessary to perform the Services. The Contractor warrants that all personnel engaged in the Services shall be qualified to perform the Services, and shall be properly licensed and otherwise authorized to do so under all applicable laws.

7.2 Unless otherwise authorized in writing, during the term of this Agreement, and for a period of six (6) months after the Completion Date in block 1.7, the Contractor shall not hire, and shall not permit any subcontractor or other person, firm or corporation with whom it is engaged in a combined effort to perform the Services to hire, any person who is a State employee or official, who is materially involved in the procurement, administration or performance of this

Agreement. This provision shall survive termination of this Agreement.

7.3 The Contracting Officer specified in block 1.9, or his or her successor, shall be the State's representative. In the event of any dispute concerning the interpretation of this Agreement, the Contracting Officer's decision shall be final for the State.

8. EVENT OF DEFAULT/REMEDIES.

8.1 Any one or more of the following acts or omissions of the Contractor shall constitute an event of default hereunder ("Event of Default"):

8.1.1 failure to perform the Services satisfactorily or on schedule;

8.1.2 failure to submit any report required hereunder; and/or

8.1.3 failure to perform any other covenant, term or condition of this Agreement.

8.2 Upon the occurrence of any Event of Default, the State may take any one, or more, or all, of the following actions:

8.2.1 give the Contractor a written notice specifying the Event of Default and requiring it to be remedied within, in the absence of a greater or lesser specification of time, thirty (30) days from the date of the notice; and if the Event of Default is not timely remedied, terminate this Agreement, effective two (2) days after giving the Contractor notice of termination;

8.2.2 give the Contractor a written notice specifying the Event of Default and suspending all payments to be made under this Agreement and ordering that the portion of the contract price which would otherwise accrue to the Contractor during the period from the date of such notice until such time as the State determines that the Contractor has cured the Event of Default shall never be paid to the Contractor;

8.2.3 set off against any other obligations the State may owe to the Contractor any damages the State suffers by reason of any Event of Default; and/or

8.2.4 treat the Agreement as breached and pursue any of its remedies at law or in equity, or both.

9. DATA/ACCESS/CONFIDENTIALITY/PRESERVATION.

9.1 As used in this Agreement, the word "data" shall mean all information and things developed or obtained during the performance of, or acquired or developed by reason of, this Agreement, including, but not limited to, all studies, reports, files, formulae, surveys, maps, charts, sound recordings, video recordings, pictorial reproductions, drawings, analyses, graphic representations, computer programs, computer printouts, notes, letters, memoranda, papers, and documents, all whether finished or unfinished.

9.2 All data and any property which has been received from the State or purchased with funds provided for that purpose under this Agreement, shall be the property of the State, and shall be returned to the State upon demand or upon termination of this Agreement for any reason.

9.3 Confidentiality of data shall be governed by N.H. RSA chapter 91-A or other existing law. Disclosure of data requires prior written approval of the State.

10. **TERMINATION.** In the event of an early termination of this Agreement for any reason other than the completion of the Services, the Contractor shall deliver to the Contracting Officer, not later than fifteen (15) days after the date of termination, a report ("Termination Report") describing in detail all Services performed, and the contract price earned, to and including the date of termination. The form, subject matter, content, and number of copies of the Termination Report shall be identical to those of any Final Report described in the attached EXHIBIT A.

11. **CONTRACTOR'S RELATION TO THE STATE.** In the performance of this Agreement the Contractor is in all respects an independent contractor, and is neither an agent nor an employee of the State. Neither the Contractor nor any of its officers, employees, agents or members shall have authority to bind the State or receive any benefits, workers' compensation or other emoluments provided by the State to its employees.

12. **ASSIGNMENT/DELEGATION/SUBCONTRACTS.** The Contractor shall not assign, or otherwise transfer any interest in this Agreement without the prior written notice and consent of the State. None of the Services shall be subcontracted by the Contractor without the prior written notice and consent of the State.

13. **INDEMNIFICATION.** The Contractor shall defend, indemnify and hold harmless the State, its officers and employees, from and against any and all losses suffered by the State, its officers and employees, and any and all claims, liabilities or penalties asserted against the State, its officers and employees, by or on behalf of any person, on account of, based or resulting from, arising out of (or which may be claimed to arise out of) the acts or omissions of the Contractor. Notwithstanding the foregoing, nothing herein contained shall be deemed to constitute a waiver of the sovereign immunity of the State, which immunity is hereby reserved to the State. This covenant in paragraph 13 shall survive the termination of this Agreement.

14. INSURANCE.

14.1 The Contractor shall, at its sole expense, obtain and maintain in force, and shall require any subcontractor or assignee to obtain and maintain in force, the following insurance:

14.1.1 comprehensive general liability insurance against all claims of bodily injury, death or property damage, in amounts of not less than \$1,000,000 per occurrence and \$2,000,000 aggregate; and

14.1.2 special cause of loss coverage form covering all property subject to subparagraph 9.2 herein, in an amount not less than 80% of the whole replacement value of the property.

14.2 The policies described in subparagraph 14.1 herein shall be on policy forms and endorsements approved for use in the State of New Hampshire by the N.H. Department of Insurance, and issued by insurers licensed in the State of New Hampshire.

14.3 The Contractor shall furnish to the Contracting Officer identified in block 1.9, or his or her successor, a certificate(s) of insurance for all insurance required under this Agreement. Contractor shall also furnish to the Contracting Officer identified in block 1.9, or his or her successor, certificate(s) of insurance for all renewal(s) of insurance required under this Agreement no later than thirty (30) days prior to the expiration date of each of the insurance policies. The certificate(s) of insurance and any renewals thereof shall be attached and are incorporated herein by reference. Each certificate(s) of insurance shall contain a clause requiring the insurer to provide the Contracting Officer identified in block 1.9, or his or her successor, no less than thirty (30) days prior written notice of cancellation or modification of the policy.

15. WORKERS' COMPENSATION.

15.1 By signing this agreement, the Contractor agrees, certifies and warrants that the Contractor is in compliance with or exempt from, the requirements of N.H. RSA chapter 281-A ("*Workers' Compensation*").

15.2 To the extent the Contractor is subject to the requirements of N.H. RSA chapter 281-A, Contractor shall maintain, and require any subcontractor or assignee to secure and maintain, payment of Workers' Compensation in connection with activities which the person proposes to undertake pursuant to this Agreement. Contractor shall furnish the Contracting Officer identified in block 1.9, or his or her successor, proof of Workers' Compensation in the manner described in N.H. RSA chapter 281-A and any applicable renewal(s) thereof, which shall be attached and are incorporated herein by reference. The State shall not be responsible for payment of any Workers' Compensation premiums or for any other claim or benefit for Contractor, or any subcontractor or employee of Contractor, which might arise under applicable State of New Hampshire Workers' Compensation laws in connection with the performance of the Services under this Agreement.

16. WAIVER OF BREACH. No failure by the State to enforce any provisions hereof after any Event of Default shall be deemed a waiver of its rights with regard to that Event of Default, or any subsequent Event of Default. No express failure to enforce any Event of Default shall be deemed a waiver of the right of the State to enforce each and all of the provisions hereof upon any further or other Event of Default on the part of the Contractor.

17. NOTICE. Any notice by a party hereto to the other party shall be deemed to have been duly delivered or given at the time of mailing by certified mail, postage prepaid, in a United States Post Office addressed to the parties at the addresses given in blocks 1.2 and 1.4, herein.

18. AMENDMENT. This Agreement may be amended, waived or discharged only by an instrument in writing signed by the parties hereto and only after approval of such amendment, waiver or discharge by the Governor and Executive Council of the State of New Hampshire unless no

such approval is required under the circumstances pursuant to State law, rule or policy.

19. CONSTRUCTION OF AGREEMENT AND TERMS.

This Agreement shall be construed in accordance with the laws of the State of New Hampshire, and is binding upon and inures to the benefit of the parties and their respective successors and assigns. The wording used in this Agreement is the wording chosen by the parties to express their mutual intent, and no rule of construction shall be applied against or in favor of any party.

20. THIRD PARTIES. The parties hereto do not intend to benefit any third parties and this Agreement shall not be construed to confer any such benefit.

21. HEADINGS. The headings throughout the Agreement are for reference purposes only, and the words contained therein shall in no way be held to explain, modify, amplify or aid in the interpretation, construction or meaning of the provisions of this Agreement.

22. SPECIAL PROVISIONS. Additional provisions set forth in the attached EXHIBIT C are incorporated herein by reference.

23. SEVERABILITY. In the event any of the provisions of this Agreement are held by a court of competent jurisdiction to be contrary to any state or federal law, the remaining provisions of this Agreement will remain in full force and effect.

24. ENTIRE AGREEMENT. This Agreement, which may be executed in a number of counterparts, each of which shall be deemed an original, constitutes the entire Agreement and understanding between the parties, and supersedes all prior Agreements and understandings relating hereto.

Exhibit A
Scope of Services

HYSR will perform the following tasks as described in the proposal titled "A Proposal to Demonstrate a Method for Estimating Daily Stream Flow at Ungaged Sites in New Hampshire" submitted by Dr. Neil Fennessey, sole proprietor of HYSR, dated February 7, 2017.

Project goal:

To demonstrate that an updated QPPQ Transform Method (QPPQ) can generate multi-year stream flow data records at ungaged stream locations suitable for conducting instream flow protection assessments.

Scope of Work:

This QPPQ project includes HYSR updating the 1994-version of the QPPQ's daily period-of-record streamflow duration curve (FDC) model regional equation parameters. QPPQ, developed by Dr. Neil Fennessey, is used by the US Geological Survey and several state agencies for calculating daily stream flows at ungaged locations. HYSR will be employing a geographically extensive watershed network from across the northeastern United States for updating the QPPQ FDC model equation parameters.

The updated parameters are expected to reduce both the bias and error for estimating extremely low stream flows of particular interest in protecting and managing instream flows. This improvement will be verified by comparing results of flow curves developed at each of twelve New Hampshire stream gages that were part of the network of 166 sites used to develop the original equation parameters. Statistical assessments will be performed to evaluate the bias and error of the new data sets. HYSR will document the project in a draft report submitted to NHDES.

Using the new equation parameters, HYSR will demonstrate the use of QPPQ by calculating stream flows at five stream gage locations where stream flows are known. HYSR will submit these and the revised draft report as its final report. Upon acceptance of the final report by NHDES, HYSR will present the results at a public information meeting hosted by NHDES.

Project Tasks:

HYSR will perform the following tasks, summarized below, consistent with the proposal titled "A Proposal to Demonstrate a Method for Estimating Daily Stream Flow at Ungaged Sites in New Hampshire" dated February 7, 2017.

Task a: Develop an updated daily period-of-record regional FDC model.

Task b: Construct period-of-record gaged flow and regional FDC model flow probability plots for each of the 12 sites listed in Table 5-1.

Task c: Construct Bias and Root Mean Square Error (RMSE) plots to compare the period-of-record gaged flow and regional FDC model flow for the twelve sites listed in Table 5-1.

Task d: Estimate the streamflow exceedance probabilities for the Critical and Rare PISF respectively for each of the 6 bio-periods using the daily period-of-record gaged data for the Souhegan River, Merrimack, NH USGS stream gage.

Task e: Using the 12 seasonal probabilities, two per bio-period, from Task d., estimate the twelve "equivalent" Critical and Rare flow quantiles using the daily period-of-record gaged data for the Diamond River near Wentworth, NH; the Saco River near Conway, NH; the Oyster River near Durham, NH and the Pemigewasset River at Plymouth, NH. Compile a draft report describing the project and its results and submit the report to NHDES.

Task f: Using the QPPQ Transform and the updated daily period-of-record FDC model from Task a., generate a multi-year daily streamflow time series for the five gage sites listed in Table 6-1.

Task g: Submit the final report comprised of the revised draft report with the time series for the five gaged sites listed in Table 6-1.

Task h: Conduct a public presentation describing the QPPQ Transform Method, the updates made to regional FDC model under this project and the statistical analysis of the results.

Deliverables:

HYSR will provide the following deliverables, summarized below, consistent with the proposal provided to NHDES dated February 7, 2017.

1. Twelve period-of-record gaged flow and regional FDC model flow probability plots for the 12 sites listed in Table 5-1.
2. Two plots that compare the period-of-record gaged flow and regional FDC model flow for the 12 sites listed in Table 5-1.
3. A table showing the estimated streamflow exceedance probabilities for each of the six Souhegan River bio-periods.
4. A table showing the stream flow level equivalents for the four remaining rivers listed in Table 6-1.
5. A draft report documenting and explaining the processes and results of Tasks a. through f.
6. Five daily stream flow time series derived from the QPPQ Transform Method of at least 30 years duration for the sites listed in Table 6-1.
7. A final report incorporating revisions of the draft report and the five daily stream flow time series.
8. Attendance and presentation at a public information meeting held by NHDES

Exhibit B
Method of Payment and Contract Price

The total contract price shall be \$30,000. This amount will be charged for completing the tasks in Table 7-1 of the HYSR proposal. These tasks will result in updating and demonstrating the QPPQ Transform Method, a tool for calculating stream flows at ungaged locations. The payments will be billed in two parts: 1) following the completion of the draft report; and 2) after the submittal of the final report and HYSR's presentation of the project results at a public information meeting. The State shall pay to the Contractor the project costs in accordance with the following requirements:

No tasks shall be eligible for payment until after the task has been completed. All services shall be performed to the satisfaction of NHDES before payment will be made. All payments shall be made upon receipt and approval of a statement of the tasks completed and upon receipt of an associated invoice. Payments shall be made in accordance with the following schedule based upon completion of specific tasks described in Exhibit A. The total reimbursement shall not exceed the contract award of \$30,000.

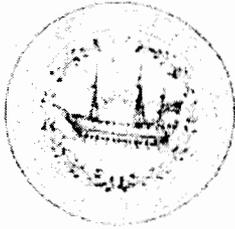
Upon completion and NHDES approval of Tasks a. through e.	\$ 25,000
Upon completion and NHDES approval of Tasks f. through h.	<u>\$ 5,000</u>
	\$ 30,000

**Exhibit C
Special Provisions**

14. INSURANCE.

Paragraph 14 of the General Provisions of the standard state agreement is expressly waived. This provision is being waived because the Contractor is an individual and carrying this general liability insurance would be cost prohibitive. The work being conducted is desktop computer work that should not expose the state to any liability.

CERTIFICATE OF AUTHORITY – No Certificate of Authority is required to be provided by the Contractor because the Contractor is the sole proprietor of HYSR and there are no other principals.



State of New Hampshire
Department of State



CERTIFICATE OF REGISTERED TRADE NAME

OF

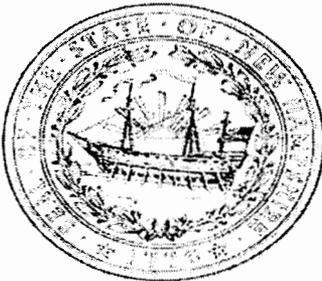
HYSR

This is to certify that **Neil M. Fennessey Ph.D.** registered in this office as doing business under the Trade Name **HYSR** at **49 School St., Dartmouth, MA, 02748, USA** on **02/03/2017**.

The nature of business is **Professional, Scientific, and Technical Services / Environmental Consulting Services**, in New Hampshire.

Expiration Date: **02/03/2022**

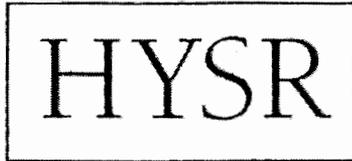
Business ID: **764128**



IN TESTIMONY WHEREOF, I hereto
set my hand and cause to be affixed
the Seal of the State of New Hampshire,
this 3rd day of February, 2017 A.D.

A handwritten signature in cursive script.

William M. Gardner
Secretary of State



February 27, 2017

To: Mr. Wayne C. Ives, P.G.
Instream Flow Specialist
New Hampshire Department of Environmental Services
29 Hazen Driver
Concord, NH 03301

Subject: Worker's Compensation Insurance

Dear Mr. Ives;

This letter will serve as notice that the study proposed by HYSR for the NH DES does not require Worker's Compensation Insurance. According to N.H. RSA **Chapter 281-A Workers' Compensation** "Sole-proprietors, partners and self-employed persons are not required to carry workers' compensation on themselves but may elect to be covered, per RSA 281-A:3."

HYSR is a sole proprietorship business with no employees or subcontractors. Dr. Neil M. Fennessey alone will be conducting the proposed study.

HYSR's state of New Hampshire business ID number is 764128 and HYSR's account number is 03-44-44-442010-1518-102

Sincerely,

Neil M. Fennessey, Ph.D.