



Metropolitan Water Reclamation District of Greater Chicago

100 East Erie Street
Chicago, IL 60611

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Title: Authorization to Subscribe to the Water Research Foundation for the 2018 Annual Research Commitment in an amount not to exceed \$138,000.00, Account 101-15000-612280

Sponsors:

Indexes:

Code sections:

Attachments:

Date	Ver.	Action By	Action	Result
12/7/2017	1	Board of Commissioners	Approved	Pass
12/7/2017	1	Committee of the Whole	Recommended	Pass

TRANSMITTAL LETTER FOR BOARD MEETING OF DECEMBER 7, 2017

COMMITTEE ON MONITORING AND RESEARCH

Mr. David St. Pierre, Executive Director

Authorization to Subscribe to the Water Research Foundation for the 2018 Annual Research Commitment in an amount not to exceed \$138,000.00, Account 101-15000-612280

Dear Sir:

Authorization is requested to make payment, by direct voucher, to the Water Research Foundation (WRF), formerly the Water Environment and Reuse Foundation, for the 2018 Annual Research Commitment, in an amount not to exceed \$138,000.00.

The Metropolitan Water Reclamation District of Greater Chicago (District) is in receipt of the 2018 annual subscription renewal notice from WRF for the period January 1, 2018, through December 31, 2018.

WRF is currently sponsoring 103 projects totaling approximately \$29 million, of which \$14 million is WRF's cost for the projects. Of these 103 projects, 76 projects, totaling about \$26 million of expenditures, are especially applicable to the District and are summarized below.

1. Project ENER10C13, State of the Science and Issues Related to Heat Recovery from Wastewater, Budget - \$146,327
2. Project ENER15C15, WaterWatts: A Modern Look at Wastewater Power-Metering Data, Budget - \$294,460
3. Project ENER16C15, Design and Validation Protocol for UV Disinfection Systems Used in Municipal Wastewater Treatment and Reuse Applications, Budget - \$542,000
4. Project ENER17C15, Barriers and Opportunities for Distributed Energy Resource Integration for

Water and Wastewater Utilities and Energy Utilities, Budget - \$232,000

5. Project ENER18C15, Assess Public Private Partnerships and Opportunities for Water and Wastewater Energy Projects, Budget - \$150,000
6. Project ENER19C17, Food Co-Digestion in Wastewater Resource Recovery Facilities, Budget - \$191,301
7. Project ENER5R12, More Juice from Wastewater and Solids Treatment (Task A, USAB), Budget - \$361,840
8. Project ENER8R13, Developing Solutions to Operational Side Effects Associated with Co-Digestion of High Strength Organic Wastes, Budget - \$786,447
9. Project LCASW1SG16, Community-Enabled Lifecycle Analysis of Stormwater Infrastructure Costs, Budget - \$454,643
10. Project LCASW2SG16, Community-Enabled Lifecycle Analysis of Stormwater Infrastructure Costs, Budget - \$580,337
11. Project LCASW3SG16, Community-Enabled Lifecycle Analysis of Stormwater Infrastructure Costs, Budget - \$294,968
12. Project LCASW4SG16, Community-Enabled Lifecycle Analysis of Stormwater Infrastructure Costs, Budget - \$225,000
13. Project LCASW5SG16, Community-Enabled Lifecycle Analysis of Stormwater Infrastructure Costs, Budget - \$150,000
14. Project LCASW6SG16, Community-Enabled Lifecycle Analysis of Stormwater Infrastructure Costs, Budget - \$11,877
15. Project LCASW7SG16, Data Analysis and Standardization to Support "Community-Enabled Lifecycle Analysis of Stormwater Infrastructure Costs (CLASIC)", Budget - \$166,378
16. Project LIFT14T16, Design and Implementation of Peracetic Acid for Municipal Water and Wastewater Related Processes, Budget - \$1,164,779
17. Project LIFT17T16, LIFT for Management: Developing Utility Analysis and Improvement Methodology, Budget - \$372,000
18. Project LIFT18C16, WE&RF-Korea Water Partnership on Water Technology and Innovation, Budget - \$30,000
19. Project LIFT19R17, Interactive for Water Industry Innovation Survey, Budget - \$20,000
20. Project LIFT20SG17a, Hydrothermal Processing of Wastewater Solids (Hypowers), Budget - \$22,816
21. Project LIFT20SG17b, Hydrothermal Processing of Wastewater Solids (Hypowers), Budget - \$10,000
22. Project LIFT20SG17c, Hydrothermal Processing of Wastewater Solids (Hypowers), Budget - \$10,000
23. Project LIFT20SG17d, Hydrothermal Processing of Wastewater Solids (Hypowers), Budget - \$11,303
24. Project LIFT20SG17e, Hydrothermal Processing of Wastewater Solids (Hypowers), Budget - \$95,000
25. Project LIFT2R14b, LIFT Link Database, Budget - \$43,807
26. Project LIFT8C14, Creating the Space to Innovate, Budget - \$20,000

27. Project LINK1T11a, Applicability Analysis of Existing Models for Site-Specific Water Quality Criteria to Protect Designated Uses from Nutrient Impacts - Outreach, Budget - \$30,000
28. Project LINK3R16, Evaluation of Data Needs for Nutrient Target-Setting Using the Nutrient Modeling Toolbox, Budget - \$295,750
29. Project LINK4T17, Modeling Guidance for Developing Site-Specific Nutrient Goals - Demonstration, Screening Level Application, Budget - \$150,000
30. Project NTRY10T15, Nutrient Recovery through Urine Separation , Budget - \$69,992
31. Project NTRY11T15, High-Tech Analysis of Low-Tech Methods for Sustainable Class A Biosolids Production, Budget - \$111,874
32. Project NTRY12R16, Unintended Consequences of Resource Recovery on Overall Plant Performance: Solving the Impacts on Dewaterability Properties, Budget - \$490,000
33. Project NTRY13R16, Understanding the Impacts of Low-Energy and Low-Carbon Nitrogen Removal Technologies on Bio-P and Nutrient Recovery Processes, Budget - \$641,826
34. Project NTRY4R14, A Multi-Platform Approach to Recovering High Value Carbon Products from Wastestreams, Budget - \$667,348
35. Project NTRY6R14, Production of Bioisoprene from Wastewater, Budget - \$219,358
36. Project NTRY7R15, High Quality Biosolids from Wastewater, Budget - \$1,179,649
37. Project NTRY8R15, Plasmids and Rare Earth Elements from Wastewater, Budget - \$69,217
38. Project NTRY9T15, Sustainable Struvite Control Using Residual Gas from Digester Gas Cleaning Process, Budget - \$492,116
39. Project NUTR1R06-TO5, Efficient, Cost-Effective Nutrient Removal from Wastewater, Budget - \$2,590,910
40. Project NUTR1R06-TO6 (aka NUTR5R14), Efficient, Cost-Effective Nutrient Removal from Wastewater, Budget - \$594,778
41. Project SENG2C14, Integrated Management of Sensor Data for Real Time Decision Making and Response, Budget - \$50,000
42. Project SENG4C15, Focus Area Development Workshop-Defining Attributes and Demonstrating Benefits of Intelligent Distribution Systems (WRF#04614), Budget - \$34,999
43. Project SENG6R16, Designing and Implementing Sensor-Based Networks on a Sewershed Scale for Real-Time Collection System Decision-Making, Operation and Management, Budget - \$150,000
44. Project SIWM12C15, Incorporating Forestry into Stormwater Management Programs: State of the Science and Business Model Evaluation for Nutrient Reduction and Volume Control, Budget - \$152,458
45. Project SIWM14T16, Agricultural BMP Database (USB Soybean Board), Budget - \$26,208
46. Project SIWM15T16 (WERF4C11c), Agricultural BMP database (National Corn Growers Association), Budget - \$23,750
47. Project SIWM17R16, Design Professional's Practice Guide to Non-Potable Onsite Water Reuse, Budget - \$10,000
48. Project SIWM22C17, Standardize BMP Maintenance Tracking and Reporting Protocols (through the International Stormwater BMP Database project), Budget - \$20,000
49. Project SIWM9R14, Toolbox for Completing an Alternative Analysis as Part of an Integrated Planning Including Water Quality Compliance, Budget - \$124,576
50. Project STAR_N1R14 (SG), Nutrient Recovery Through Urine Separation , Budget - \$554,034

51. Project STAR_N2R14 (SG), Development and Implementation of a Process Technology Toolbox for Sustainable Biological Nitrogen Removal Using Mainstream Deammonification, Budget - \$832,052
52. Project STAR_N4R14 (SG), Enhanced Removal of Nutrients from Urban Runoff with Novel Unit-Process Capture, Treatment, and Recharge Systems, Budget - \$494,000
53. Project TIRR2R15, Hybrid Anaerobic Primary and Secondary Treatment with Energy Recovery, Budget - \$621,446
54. Project TIRR3C15, Bioaugmentation of Activated Sludge with High Activity Nitrifying Granules/Flocs: Population Selection, Survival, Biokinetics, Budget - \$961,171
55. Project TIRR5C15, Biofilm-Enhanced Anaerobic Membrane Bioreactor for Low Temperature Domestic Wastewater Treatment, Budget - \$330,000
56. Project TOBI2R15, Developing Exposure and Toxicity Data for Priority Trace Organics in Biosolids, Budget - \$359,049
57. Project TOBI3R17, Knowledge Gap Analysis for Plant Uptake Models, Budget - \$34,000
58. Project U1R13, Investigate the Mechanism for Optimization and Design of Side-Stream EBPR Process as a Sustainable Approach for Achieving Stable and Efficient Phosphorus Removal, Budget - \$543,239
59. Project U1R14, Balancing Flocs and Granules for Activated Sludge Process Intensification in Plug Flow Configurations, Budget - \$1,855,598
60. Project U1R15, Nationwide Meta-omics Survey of Anaerobic Digestion and Fermentation Processes for Resource Recovery from Biosolids and Other Organics, Budget - \$230,961
61. Project U2R13, Evaluating Fate Mechanisms for Contaminants of Concern in BNR Treatment Systems, Budget - \$159,717
62. Project U2R14, Bench and Pilot Studies of Membrane-Aerated Biofilm Reactors (MABRs) for Energy Efficient Wastewater Treatment, Budget - \$245,494
63. Project U3R12, Nationwide Meta-omics Survey of Denitrifying Microbial Communities in Wastewater Treatment Systems, Budget - \$218,882
64. Project U3R14, Carbon Capture and Management Strategies for Energy Harvest from Wastewater, Budget - \$586,471
65. Project U3R15, Evaluating Fate of Coliphages in WRRFs and Potential Costs to Reduce Coliphages in WRRF Effluents, Budget - \$370,745
66. Project U4R12, Stabilization of Main Plant Nitrification/Denitrification Performance, Budget - \$403,855
67. Project U4R14, Development of Protocols and Methods for Predicting the Remaining Economic Life of Wastewater Pipes, Budget - \$229,077
68. Project U4R15, Intensified Hydrolysis for High Solids Destruction: Testing the Limits of Advanced Digestion, Budget - \$1,062,695
69. Project U4R16, Estimating the Comammox Contribution to Ammonia Oxidation in Nitrogen Removal Systems, Budget - \$232,885
70. Project U5R12, Conveyance Asset Prediction System (CAPS): Modeling and Mitigation, Budget - \$750,948
71. Project WERF1C15, Occurrence, Proliferation, and Persistence of Antibiotics and Antibiotic Resistance during Wastewater Treatment, Budget - \$158,180
72. Project WERF1C17, Development of a Utility Response Plan for Acceptance by WRRFs of Wastewaters Impacted with High-Consequence Pathogens, Budget - \$20,000

- 73. Project WERF1PR16, Use of Asset Management Data to Assess Relative Impacts of Attributes within Wastewater Systems from Flushed Products, Budget - \$22,000
- 74. Project WERF3C16, Emerging Contaminant Research Prioritization Decision Framework, Budget - \$68,880
- 75. Project WERF4PR16, Metagenomics Peer Review (MWRD Greater Chicago), Budget - \$50,000
- 76. Project CEC7R17, Microplastics in Aquatic Systems: An Assessment of Risk, Budget - \$15,000

By remaining a subscriber to WRF, the District will reap the benefits of the findings from various projects in a timely manner through WRF's excellent progress reports and final reports. The information that will be gathered particularly in the areas of water quality, wastewater treatment, energy recovery, sludge processing, and nutrient removal will be highly beneficial to the District's current operations and future planning of capital improvement projects. It is estimated that the District's annual investment of \$138,000.00 for a WRF subscription saves the District many times that amount if this research were to be conducted in-house.

WRF, the sole-source of supply, has submitted pricing for the amount of the research commitment requested. Inasmuch as the research benefits are not available through any other source of supply, nothing would be gained by advertising for bids (Section 11.4 of the Purchasing Act).

It is hereby recommended that the Board of Commissioners authorize payment, by direct voucher, to WRF, in an amount not to exceed \$138,000.00. Funds are being requested in Account 101-15000-612280 and are contingent on the Board of Commissioners' approval of the District's budget for 2018.

Requested, Edward W. Podczerwinski, Director of Monitoring and Research, EWP:KB:RA:HZ:AC:kq

Recommended, Eileen M. McElligott, Administrative Services Officer

Respectfully Submitted, Kari K. Steele, Chairman Committee on Monitoring and Research

Disposition of this agenda item will be documented in the official Regular Board Meeting Minutes of the Board of Commissioners for December 7, 2017