

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
THE CITY UNIVERSITY OF NEW YORK

AGREEMENT FOR HUNTS POINT WASTEWATER TREATMENT PLANT ODOR SURVEY

THIS AGREEMENT HAS BEEN made and entered into as of the latest date of the signatures which conclude this Agreement, by and between the CITY OF NEW YORK, acting by and through the NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION (hereinafter the "CITY" OR "DEP") located at 59-17 Junction Boulevard, Flushing, New York 11373 and the CITY UNIVERSITY OF NEW YORK (hereinafter "CUNY"), located at 535 East 80th Street, New York, New York 10021, acting by and on behalf of City College of New York, with an address at Convent Avenue and 138th Street, New York, N.Y. 10031.

WHEREAS, DEP is planning to conduct an air quality monitoring program in the Hunts Point peninsula.

NOW, THEREFORE, the parties hereto agree as follows:

- 1 This Agreement will be effective when registered by the Comptroller of the City of New York.
- 2 The City College of New York (hereinafter "CCNY") which is part of the City University of New York (hereinafter "CUNY") will undertake and perform the work (the "Work", as defined in Appendix A) commencing on a date set forth in a Notice to Commence Work (the "Commencement Date") which will be sent by ordinary mail to CUNY at the address designated in paragraph 4(f) of this Agreement.
- 3 This Agreement will terminate, unless sooner terminated pursuant to paragraph (8), five hundred and forty-eight (548) days after the Commencement Date. In the event that the Work is not to be completed prior to the termination date, the Agreement may be extended when, in the opinion of DEP's Agency Chief Contracting Officer ("ACCO"), CCNY has been delayed and will not be able to complete the Work within the period of performance herein above specified. Upon submission of a written notice from CCNY documenting the causes of the delay in such a form as is satisfactory to the ACCO, the ACCO may, in his discretion, grant an extension of time to complete the Work. The extension is granted for payment purposes only and at no cost to DEP.
- 4 DEP and CUNY hereto agree that the total amount of this Agreement is \$115,431.
 - (a) Upon the submission of invoices with supporting documentation, in a form acceptable to DEP, DEP will pay the principal sum (hereinafter "the Funds") up to \$98,710, over the term of this Agreement to the Research Foundation of CUNY ("CUNY RF" or "RF") at the address designated in paragraph 4(h) towards the satisfactory completion of the Work and in accordance with paragraphs 4 (c), 4 (d) and 4 (e) hereof and the budget (Appendix "B").
 - (b) CCNY will contribute services (the "Services"), analytical supplies or equipment up to \$16,721 as set forth in the Budget.
 - (c) Pursuant to a certain Agreement dated October 20, 1983, by and between the RF and CUNY,

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the RF will act as the fiscal agent to CUNY and administer the funds for this Agreement. The RF, acting as CUNY's fiscal agent for sponsored programs, will prepare monthly invoices, which will be supported by the RF's computer printout entitled "COMPUTRON".

- (d) The Funds will be used exclusively for expenditures incurred in connection with this Agreement.
- (e) DEP will remit the Funds to the RF. The RF will use the funds to pay CUNY, its agents, servants, employees, and subcontractors for expenses incurred in connection with the Work and to offset other direct and indirect costs.
- (f) Upon reasonable notice to the RF, all fiscal records will be made available for review at its offices located at 230 West 41st Street, New York, NY 10036, during normal business hours.
- (g) CCNY will provide DEP with monthly progress reports and hold monthly meetings on the Work.
- (h) Any notices required by law and/or this Agreement will be sent as follows:

To DEP:

For Technical Correspondence:

New York City Department of Environmental Protection
Bureau of Wastewater Pollution Control, Process Planning Section 96-05
Horace Harding Expressway 2nd Floor - Low Rise
Elmhurst, New York 11373
Attn: Luis A. Carrio, Division Chief, Air, Energy and Harbor Water Quality / Wayne Kuang,
Research Scientist

For Legal matters:

NYCDEP Bureau of Legal Affairs
59-17 Junction BLVD., 19th Floor
Flushing, New York 11373
Attn: Frank Schiano, Esq., Assistant Counsel

To CUNY:

For Technical Correspondence:

City College Department of Civil Engineering
Convent Avenue at 138th Street
New York, New York 10031
Attn: Professor Beth Wittig

For Legal Matters:

General Counsel
The City University of New York
535 East 80th Street
New York, New York 10075
Attn: JOW Hunts Point MOU

For Fiscal Correspondence:

The City University of New York
535 East 80th Street
New York New York 10075
Attn: Vice Chancellor for Budget, Finance, and Information Services

For Fiscal Agent Correspondence:

Research Foundation of CUNY
230 West 41st Street
New York, NY 10036
Attn: Jarnee Bramlette, Director of Finance

- (i) Additional dollar amounts or services may be contributed by either party during the term of this Agreement as may be agreed to and set forth in written amendments to this Agreement.
- 5 CCNY will appoint a Project Representative to supervise field and office work at all times. In the event this Project Representative is replaced, CUNY shall inform DEP of the replacement in advance no less than three (3) days of such replacement and provide DEP with the name and resume of the new Project Representative.
 - 6 The Work will be performed in accordance with good engineering practices.
 - 7 Subject to approval by DEP, CUNY will purchase all equipment, materials, and supplies necessary to effectuate the Work and will be reimbursed for those expenses by DEP. DEP will retain title to all equipment purchased with the Funds and CUNY will promptly return such equipment to DEP at its request.
 - 8 The Work will be subject to inspection by DEP. DEP will notify CCNY in writing of any deficiencies and provide CCNY with reasonable time to correct such deficiencies. In the event that CCNY does not correct such deficiencies, DEP may terminate this Agreement upon thirty (30) days' written notice to CUNY.
 - 9 Nothing contained herein will be deemed to relieve CUNY from its obligations and tasks in connection with the performance of the Work under this Agreement.
 - 10 (a) CUNY and DEP agree to mutually indemnify each other and save each other harmless from all claims, liabilities, losses, damages, and expenses of every character whatsoever for bodily injury, sickness and/or disease, including death, or damage to real or personal property sustained by any employee of CUNY or DEP or any other persons, arising out of the negligent acts of the indemnifying party with respect to its obligations under this Agreement except where such injury, sickness, and/or disease, including death or damage to real or personal property was caused by the sole negligence or willful tort of the party to be indemnified or any of its employees or agents. Neither party shall be liable to the other for any indirect, incidental, or consequential damages.

(b) In the event that any person sustains bodily injury, sickness, and/or disease, including death or damage to real or personal property resulting from the Work that was performed

pursuant to this Agreement and such injury, sickness, and/or disease, including death or damage to real or personal property was caused by the combined negligence of CUNY and DEP, each party shall indemnify and save harmless the other for the amount of any and all claims, liabilities, losses, damages, and expenses, as determined by a court of competent jurisdiction in accordance with the relative culpability of the parties.

- 11 Any invention or discovery, whether or not patentable, conceived or reduced to practice by any employee of CUNY during the course of his performance under this Agreement or any amendment thereto will be reported to DEP with complete information concerning such invention or discovery. DEP retains all right, title, and interest to any such invention or discovery and retains the sole right to determine whether a patent application will be filed. CCNY and its employees will cooperate fully with DEP to enable it to secure the rights retained under this paragraph and will execute all documents necessary to do so.
- 12 DEP reserves the rights to publish the results of this Agreement and will give credit to CUNY and CCNY in any such publication. CUNY and CCNY, their employees and agents will get written approval from DEP before publishing any results of this Agreement.
- 13 This Agreement may be amended only by the written Agreement of DEP and CUNY.
- 14 The parties will comply with all state, federal, and local laws, rules, and regulations applicable to the Work performed under this Agreement.

(The signatures follow on the next page with the remainder of this page intentionally left blank.)

STATE OF NEW YORK)
 } ss.:
COUNTY OF NEW YORK }

On the 29th day of March 2011, before me personally came Frederick P. Schaffer, to me known, who, being by me duly sworn, did depose and say that he is the General Counsel and Senior Vice Chancellor for Legal Affairs of the City University of New York, the University described in and which executed the above contract, and that he signed his name thereto pursuant to the authority vested in him by the Board of Trustees of the City University of New York.

Sophia Walsh
Notary Public

SOPHIA WALSH
Notary Public, State of New York
No. 01WA5023913
Qualified in Queens County
Commission Expires March 29, 2014

APPENDIX A - SCOPE OF WORK

HUNTS POINT WASTEWATER TREATMENT PLANT ODOR SURVEY

The purpose of this work is to characterize odors in the Hunts Point Wastewater Treatment Plant (WWTP). Potential odor emissions from wastewater treatment plants (WWTP) may be dependent on the characteristics of the influent wastewater, the WWTP operations that affect how odors are released from the wastewater, and the local meteorology that plays a role in the transport of odors to the surrounding community.

The treatment processes currently ongoing at the Hunts Point WWTP include:

- Screening
- Primary settling
- Step aeration activated sludge retrofitted with biological nutrient removal and centrate treatment
- Final settling
- Chlorination

Three phases of plant upgrades were considered and partially implemented:

- Phase I -- completed by October 31, 2006 -- intended to address the plant's peak wet weather capacity
- Phase II -- completed by June 30, 2008 -- intended to address the plant's nitrogen removal capabilities, and to reduce fugitive odor emissions from the primary and secondary screen rooms and the primary settling tank effluent channels
- Phase III -- not completed -- intended to improve the solids handling facilities at the plant and enhance nitrogen removal by installing new egg digesters with pollution control, and to reduce fugitive odor emissions from the primary clarifier effluent channels

Work plan

CCNY will be responsible for designing and conducting a field plan and subsequently for all data analysis after approval by DEP. The DEP's primary responsibility is to coordinate mutual efforts among CCNY and DEP personnel and its consultants as warranted.

The Principal Investigator ("PI") for the project will be Prof. Beth Wittig, P.E., of the Department of Civil Engineering at The City College of New York (CCNY). She will be the point of contact for the DEP and will make presentations of the progress and interim findings at the progress meetings. She will coordinate all research efforts. She will hire, train, and supervise all CCNY personnel in odor and ambient condition characterization, and will participate in the surveys. She will prepare monthly progress reports and the final report.

The Graduate Research Assistant ("RA") will be primarily responsible for the quality assurance of and preparation of the equipment to be used in the surveys and the analysis of the survey results and will participate in the surveys. The Undergraduate RAs will help conduct the surveys.

The work plan involves the preparation for, collection of, and analysis of information obtained through odor surveys.

These approaches will be used to characterize odors:

- Odor descriptor: A description of the odor (e.g., musty, decayed, sewer odor) using the full set of commonly accepted terms given in including Suffet, IH, GA Burlingame, PE Rosenfeld, and A Bruchet, *The Value of an Odor-Quality-Wheel Classification Scheme for Wastewater Treatment Plants*, Water Science and Technology 50(4): 25-32, 2004.
- Odor hedonic tone: A value from -10 to +10 which expresses the degree of unpleasantness and/or pleasantness of an odor including approaches found in Dravnieks A, T Musurat, RA Lamm, *Hedonics of Odors and Odor Descriptors*, JAPCA 34:752-755, 1984.
- Odor intensity: A value from 1 to 8 which corresponds to the intensity of the ambient odor in comparison to geometrically increasing concentrations of n-butanol from 12 to 1,550 ppmv, determined using ASTM E544-99 and following the guidelines for odor panelists and measurement of ambient odor intensity including Water Environment Federation, Manual of Practice No. 25: Control of odors and emissions from wastewater treatment plants, Ch 2, March 2004.
- Odor dilution-to-threshold: A value of 2, 4, 7, 15, 30 or 60 which indicates the number of times the ambient odor is diluted with odor free air before it becomes undetectable, determined using a St. Croix Nasal Ranger handheld device.
- Hydrogen sulfide concentration: A value from 0.001 to 30 ppmv which corresponds to the actual concentration of an indicator odorant in the ambient air, measured using an Arizona Instruments Jerome handheld meter

These approaches will be used to characterize ambient conditions:

- Wind speed: A value from 0.1 to 60 m/s, measured using a Kestrel 4500 handheld meter
- Wind direction: A value from 0 to 360 °, measured using a Kestrel 4500 handheld meter
- Temperature: A value from -45 to 125 °C, measured using a Kestrel 4500 handheld meter
- Relative humidity: A value from 0 to 100 %, measured using a Kestrel 4500 handheld meter
- Pressure: A value from 0.3 to 32.5 inHg, measured using a Kestrel 4500 handheld meter
- Atmospheric stability: A value of A, B, C, D, E or F, assessed by observing wind speed, solar radiation intensity and cloud cover

Task 1. Planning

Planning will be conducted by the PI. She shall work with DEP to refine the plan as needed.

- Order odor characterization equipment
- Accept and quality assure equipment at CCNY before use in field
- Develop odor and ambient condition characterization SOPs for survey team to follow
- Develop an odor monitoring data sheet for each assessor to use during surveys
- St Croix training for PI and RAs participating in the survey in ASTM E544-99 standard preparation and use

- St Croix training for PI and RAs participating in the survey in use of Nasal Ranger
- PI will train CCNY RAs in all planned odor and ambient condition characterization
- Test RAs for repeatability and sensitivity
- Develop a walking circuit that passes each treatment process in the plant, which begins at the influent treatment processes, continues to the effluent treatment processes and then the solids handling processes, and then ends along the plant perimeter
- Plan survey dates and times, so that surveys are conducted on different days of the week and over different times of day to capture routine and non-routine odor sources; the PI will attempt to schedule surveys on days with hot weather during the summer so that surveys can document a reasonable worst case scenario

Task 2. Conduct surveys and analyze results

Surveys will be conducted by the CCNY team, consisting of the PI, the Graduate RA and two Undergraduate RAs, all trained in odor and ambient condition characterizations. Surveys will be conducted on a minimum of seven (7) days. Three (3) to four (4) independent assessors will participate in each survey. Information will be collected at various points along a walking circuit of the Hunts Point WPCP and at the following two (2) receptor locations outside of the plant.

- An appropriate location within the Barretto Point Park
- An appropriate location on Viele Avenue between Bryant Avenue and Whittier Street

This information will be collected at each location during each survey:

- Odors: Odor descriptor, odor hedonic tone, odor intensity, odor dilution-to-threshold value, hydrogen sulfide concentration
- Ambient conditions: Wind speed, direction, temperature, pressure, relative humidity, atmospheric stability
- The conditions of the WPCP processes, noting potential odor sources and opportunities for odor reduction
- To the extent possible, specialized odor descriptors for different processes along the WPCP perimeter

Evaluate survey results to:

- Develop an inventory of observed and potential odors
- Prioritize the most odorous processes in the facility
- Characterize the odor potential of each process along the circuit
- Identify opportunities for odor reduction
- Identify locations of elevated odors around the plant perimeter
- To the extent possible, identify WPCP process(es) potentially responsible for observed odor along the plant perimeter
- Identify ambient conditions that lead to WPCP odor observation along the plant perimeter
- Evaluate potential odor mitigation alternatives that could be implemented at the WPCP
- Make recommendations for next steps

Task 3. Reporting

CCNY shall prepare and submit the following reports to DEP.

- Monthly Progress Reports - Compile and submit monthly progress reports that include activities by task, equipment status and other items that need to be discussed. These reports shall be submitted to DEP in PDF format.
- Quarterly Reports - Compile and submit quarterly reports that present the survey analyses. These reports shall be submitted to DEP in PDF format.
- Final Report - Compile and submit a report of the analyses of all of the survey results. The Final Report shall include a description of the existing WWTP facilities in addition to the analyses of the survey results. CCNY shall provide DEP reasonable time to review and comment before finalizing the report. Ten (10) hard copies of the final report shall be submitted to DEP. The final report shall be submitted to DEP in PDF format and survey data shall be submitted in an annotated MS Excel spreadsheet.

CCNY shall attend the following meetings.

- Quarterly meetings at DEP – At these meetings, the PI will present the status of the project and present results from the quarterly reports.
- Initial and final meetings with community – At the initial meeting, CCNY will present the finalized work plan summarized in the first quarterly report to the DEP. At the final meeting, the PI will present the survey results in the final report to DEP.

Budget

Task or item	Hourly Pay Rate	DEP Costs	CCNY Costs	Total Cost
1. Planning				
Principle investigator	\$46.8	\$5,847		\$5,847
2. Conduct surveys and analyze results				
Principle investigator	\$46.8	\$10,859	\$10,858	\$21,717
Graduate research assistant	\$25.1	\$5,972		\$5,972
Undergraduate research assistant (x2)	\$12.5	\$6,023		\$6,023
Equipment		\$24,530		\$24,530
Supplies		\$2,200		\$2,200
WEF Manual of Practice, No. 25		\$200		\$200
Training for Nasal Ranger		\$1550		\$1550
Training for ASTM E544-99		\$650		\$650
Travel		\$2,500		\$2,500
3. Reporting				
Principle investigator	\$46.8	\$5,847		\$5,847
Graduate research assistant	\$25.1	\$5,972		\$5,972
Publication costs		\$500		\$500
MTA tax		\$49		\$49
Overhead		\$26,011	\$5,863	\$31,874
TOTAL		\$98,710	\$16,721	\$115,431