



## **Special Called Meeting 5:00 PM**

### **1. Call to Order**

5:00 PM Meeting called to order on May 16, 2016 at Dallas City Hall, 129 East Memorial Drive, Dallas, GA.

### **2. Recognition of Visitors and Comments**

Corkey Welch, Stevenson & Palmer Engineering - assignment of contract

### **3. Agenda Items**

A. Mtnc. / Rehabilitation of Wells A1 & A2

B. Intergovernmental Contract PC Indust Devel Refunding Rev Bonds

### **4. Additional Items**

### **5. Adjournment**



# Dallas City Council

129 East Memorial Drive, Dallas, GA 30132

**DRAFT**

**TO:** City Council

**From:** City Hall, Kendall Smith

**Meeting:** May 16,2016 05:00 PM

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## **Mtnc. / Rehabilitation of Wells A1 & A2**

### **Summary:**

Per Well Cost \$25,400 (Plus optional Pre-Devel Pumping Test - \$2,200)

Refer to attachment

### **Recommendation:**

### **Financial Impact:**

Review:

Kendall Smith Completed 05/13/2016 4:09 PM

Dallas City Council Pending 05/16/2016 5:00 PM



## HydroSource Associates, Inc.

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April 27, 2016

Tony Van De Ryt  
Stevenson & Palmer Engineering  
2430 Herodian Way, Suite 101  
Smyrna, Georgia 30080

RE: *Probable Costs – Wells A-1 and A-2 Redevelopment, City of Dallas, Georgia*

Dear Mr. Van DeRyt:

Per our discussions, the following is a proposed general scope of work for the redevelopment of existing wells A-1 and A-2 for the City of Dallas, Georgia. The scope of work is as outlined in HSA's "Corrective Action Plan" submitted to the Georgia Environmental Protection Division (GAEPD) on behalf of the City, dated April 8, 2016.

As stated in the Corrective Action Plan, the general scope of work for the redevelopment of wells A-1 and A-2 would include the following tasks:

- Attempt to clear the borehole of the pump wire obstruction in Well A-2.
- Chlorination of each well using a concentrated chlorine solution and NuWell 410 Chlorine Enhancer (see attached information sheet).
- Agitation of the water column in each well in order to expose the boreholes to the chlorine solution, dislodge and clear water-producing fractures of debris and possible iron bacteria.
- Airlift development using pump and surge well development techniques to further dislodge mineral encrustation and/or iron bacteria, and purge it from the wells.
- Follow-up downhole camera surveys of each well to verify well redevelopment.
- Short term (12 to 24-hours) constant rate pumping tests to assess the post-redevelopment productive capacities of the redeveloped wells.
- Bacteria samples will be collected from each well near the end of the pumping period and sent for laboratory analysis.
- A brief report will be prepared for the City, Stevenson & Palmer and Georgia EPD that documents the work performed, results of the camera inspection, pumping tests, and bacteria sampling.

For the well redevelopment effort, a State of Georgia licensed well drilling subcontractor will be employed to install a set of pneumatic packers in each well that will be utilized to isolate and seal the fracture zones previously identified as influential to the overall well yield/production

capacity. A straddle packer system will be used to simultaneously isolate each of the major fracture zones. A standpipe hydraulically connected to each interval will extend to the ground surface and will be used to add chlorine/NuWell 410 treatment solution to the isolated intervals through a surface reservoir system/mix tank. The NuWell 410 treatment solution is described within the attached information sheets. The pressure head created by this system is designed to force the chlorine solution back some distance into the fracture networks within the regions surrounding each borehole as a more effective means of reaching otherwise untreatable regions on the aquifer. The treatment will be allowed to permeate the fracture intervals for approximately 24 hours. The straddle packer system will then be removed from the well and the fracture intervals will be developed through a combination of surging with a surge block and airlift well development techniques.

Note that Well A-2 is housed inside a building, and pump controls are present close to Well A-1. Hence, water ejected from the wells during the airlift development will need to be controlled. We expect that the contractor will use a diverter to control the water airlifted and into a discharge hose, and convey it out of the building and/or an appropriate distance away from the well sites. However, we caution that at least some unavoidable leakage and/or spray is bound to occur given the nature of the redevelopment work. We will try to minimize the amount of water that escapes to the degree practical. Because of this the contractor will need to inspect the sites prior to finalizing his cost estimates. We expect any adjustments would be minor.

The concentrated chlorine solution will be neutralized using NuWell 500 (Chlorout – also described in the attached information sheets). We assume that the water discharged during development will therefore have a sufficiently low chlorine residual to allow it to be discharged to ground surface near the well sites. We will confirm that this is acceptable to Georgia EPD before work commences.

In addition to these tasks, we also recommend that a short term (12 to 24-hours) constant rate pumping test be performed on Wells A-1 and A-2 prior to well redevelopment in order to ascertain the current production capacities of the wells. This will be used to define the level of improvement made in well capacity after redevelopment.


**Probable Costs**

Preparation and GAEPD Correspondence	\$ 700
Well Redevelopment	\$18,750
Camera Inspection	\$ 1,000
Follow-up Pumping Test	\$ 3,250
Brief Letter Report to GAEPD	\$ 1,700
 TOTAL PER WELL	 \$25,400
 Initial Pre-Development Pumping Test (optional – per well)	 \$ 2,200

Probable costs include all labor, equipment, materials and expenses to complete the work described. We assume the well sites are accessible for the necessary equipment to perform the work listed without additional improvements. We understand that the submersible well pumps are currently removed. We assume the City will employ its current well drilling contractor to install and remove the pumps in each well prior to the re-development effort if it opts to conduct the pre-development pumping tests. Likewise, we assume that the City's contractor will re-install the pumps in both wells after the development activities are complete. HSA will coordinate with the City, Stevenson & Palmer, and the City's contractor to conduct the pre- and post-development pumping tests, as appropriate.

Should you have any questions concerning the probable costs or the work described above, please do not hesitate to contact me, at 864-449-0236 or at cwarlick@teamhydrosource.com.

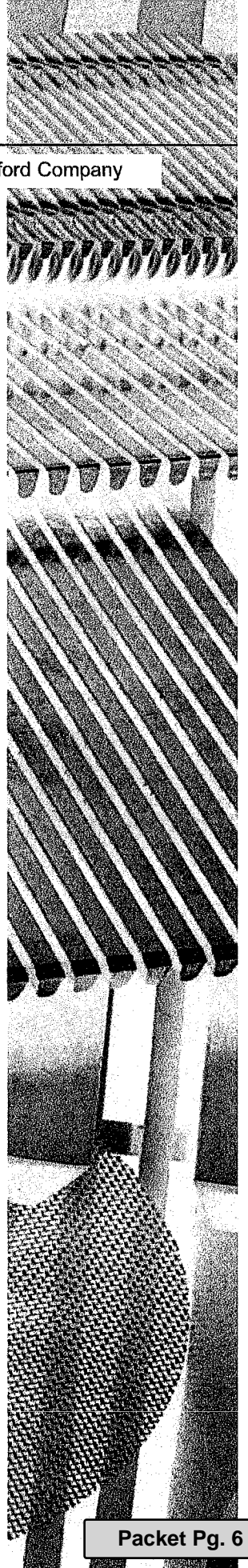
Sincerely,



Cameron M. Warlick  
Hydrogeologist/Project Manager

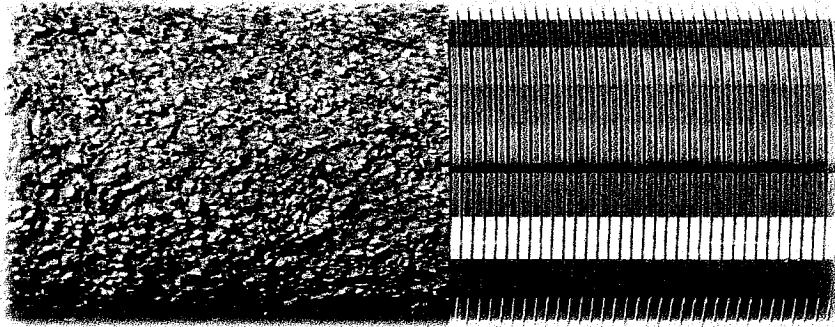
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Attachment: MX-3100N\_20160513\_163010 (1675 : Mtn. / Rehabilitation of Wells #A1 &#A2)



Attachment: MX-3100N\_20160513\_163010 (1675 : Mtn. / Rehabilitation of Wells #A1 &#A2)

**CHEMICAL REHABILITATION:  
THE SOLUTION FOR INEFFICIENT  
WATER SYSTEMS**



## NUWELL® CHEMICALS: ENVIRONMENTALLY-SAFE AND EFFECTIVE PRODUCTS TO IMPROVE YOUR WATER SYSTEM

To improve and maintain water systems, Johnson Screens is the single source for the industry's most comprehensive line of chemical solutions. Our chemicals:

### **Improve well production**

Over time, water wells experience a build-up of biofilm, and/or mineral encrustation on the well screen which will degrade a well's production. Johnson's NuWell® products can remove these blockages and return a well to peak efficiency.

### **Lengthen well life**

Keeping a well at peak efficiency eliminates or postpones costly replacement.

### **Are safe, easy, and convenient to apply**

All of Johnson's products are NSF approved for use in potable water wells and other water filtering facilities. NuWell® Chemicals can be directly applied into a well, shortening costly

down time. This means faster, safer results without having to wait for less effective treatments to work.

### **Lower the cost of well operation**

NuWell® Chemicals can lower the overall cost of operation. A highly efficient well means that pumps require less power to maintain a high output of water. Further, a pump that is working less has less wear, thus lowering maintenance requirements. A well that requires less power and maintenance costs less to operate.

### **Are safe to transport and store**

All of our other NuWell® chemical products are considered non-hazardous materials and require no special handling or shipping precautions in standard containers. The only exception is NuWell® 120 Liquid Acid which is a strong liquid acid and must be shipped, stored, handled, and used as a hazardous material.



## THE INDUSTRY'S BEST PRODUCT LINE GETS THE INDUSTRY'S BEST SUPPORT

In addition to offering a complete line of chemicals for water systems rehabilitation and maintenance, we offer unique and extensive support.

Our customer support staff ensures that every inquiry is answered in a timely, efficient manner.

The technical staff includes experts in the field of water well rehabilitation. We specialize in providing solutions to improve under-performing wells and other water handling facilities. Our chemicals have specific applications for specific problems. In addition, by combining various products the user can broaden the scope of rehabilitation. Included in this brochure are product applications and compatibility charts that will ensure the greatest effectiveness for each situation.

Johnson offers the following technical services:

- Well re-development options
- Pumping test analysis
- Troubleshooting Well Problems
- Chemical and bacterial analysis
- Chemical rehabilitation suggestions for any water handling facility

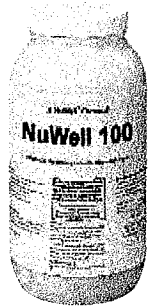
## TREATMENT CHEMICALS

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## NuWell® 100 PELLETIZED ACID



### Description

- Dry pelletized acid that sinks in water for cleaning wells
- Cleans calcium & magnesium carbonate scale, iron deposits and moderate biological growth
- Contains inhibitor to protect metal surfaces and penetrants to clean deep into filter pack and formation
- Contains color indicator to allow visual monitoring of pH during treatment
- Can be poured directly into well without dangerous splashing and no vapors are released as evident with hydrochloric acid
- Easy to use and transport
- NSF certified for potable water well use

### Application

NuWell 100 Pelletized Acid is formulated to be poured directly into the well. While it may be dissolved and pumped into the well as a liquid, the pellet form rapidly falls through the water column providing concentrated acid cleaning power at the bottom of the well. The sinking pellets are ideal for wells with short to moderate lengths of screen located at the bottom. Agitation of the acid into the blocked area will greatly enhance the effectiveness of the cleaning. The acid solution should remain in contact for a period of 12 to 24 hours, depending on the nature of the blockage. The table below provides recommended dosages for general well cleaning. The amount of acid consumed will depend on the degree of mineral scaling in the well.

Standard Dosage Recommended Quantities Per 5-ft. Screen Length	Screen Diameter	Number of 1-gal (9 lb) jars
	2 - inch	1/2
	3 - inch	1
	4 - inch	2
	5 - inch	3
	6 - inch	4
	8 - inch	5

Discharge the acid solution from the well, neutralize on the surface and dispose in accordance with the appropriate regulations.

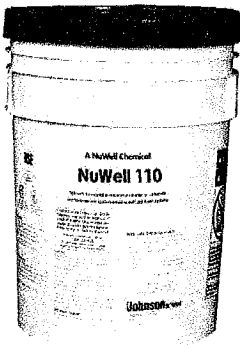
### Physical Properties, Shipping & Handling

Appearance      Yellow-brown pellet  
Density            Approx. 70 lbs/cu.ft.  
Solubility         20% by weight @ 20 C (Approximately 1 lb/gal of water)

- NuWell 100 Pelletized Acid is a strong acid-base and should not be stored with strong alkaline material or oxidizers
- Dust respirators and goggles should be worn where possibility of dust or mist exists
- Not regulated as a hazardous material under 49CFR 172.101, RECRA, SARA and CERCLA
- Can be shipped by UPS ground
- Additional physical and handling data are available on the product MSDS.
- Available in 4.5, 9, 45 and 70 lb. containers



## NuWell® 110 GRANULAR ACID



### Description

- Dry granular acid blend for cleaning residential, irrigation, commercial and municipal water wells
- Cleans calcium & magnesium carbonate scale, moderate iron deposits
- Contains inhibitor to protect metal surfaces and penetrants to clean deep into filter pack and formation
- Contains color indicator to allow visual monitoring of pH during treatment
- Can be poured directly into well without dangerous splashing
- No vapors are released as is evident with hydrochloric acid
- Easy to use and handle
- NSF certified for potable water well use

### Application

NuWell 110 Granular Acid is used in well cleaning operations as a granular product introduced at the well head or dissolved and pumped into the well as a liquid. The granular form can settle throughout the water column providing a simple application, however, for improved cleaning, it is recommended to pull the pump and treat the well as follows:

1. NuWell 110 Granular Acid should be mixed into a tank containing a volume of water and acid equal to 40% of the total treatment volume. The attached table provides the recommended dosage for general well cleaning. When possible, obtain information on construction and performance history and submit samples for laboratory analysis before application to determine if dosage modifications are warranted.
2. This mixture should be placed evenly across the well screens. Placement methods should assure contact with affected regions at the desired concentration. Agitation of the acid into the plugged area will greatly enhance the effectiveness of the cleaning.
3. The acid solution should remain in contact for a period of 12 to 48 hours, depending on the nature of the plugging. Product has limited use where heavy deposits of gypsum are suspected (add NuWell 310 BioAcid Dispersant in this situation).
4. Monitor pH often during treatment and keep below 3.0 for effective cleaning. If pH rises above 3.0 add additional acid solution of approximately 20% of original dose. The amount of acid consumed will depend on the degree of mineral scaling.

Discharge the acid solution from the well, neutralize on the surface and dispose in accordance with the appropriate regulations.

For more effective acid cleaning use NuWell 310 BioAcid Enhancer with NuWell 110 Granular Acid. (See compatibility charts).

### Physical Properties, Shipping & Handling:

Appearance	Yellow-white crystalline powder
Density	Approx. 80 lbs/cu.ft.
Solubility	20% by weight @ 20 C

- NuWell 110 Granular Acid is a strong acid-base and should not be stored with strong alkaline material or oxidizers
- Dust respirators and goggles should be worn where possibility of dust or mist exists
- Not regulated as a hazardous material under 49CFR 172.101, RECRA, SARA and CERCLA
- Can be shipped by UPS ground
- Additional physical and handling data are available on the product MSDS
- Available in 50 and 80 lb. containers



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ANSINFS 60

# DOSAGE GUIDE

## NuWell® 110 GRANULAR ACID

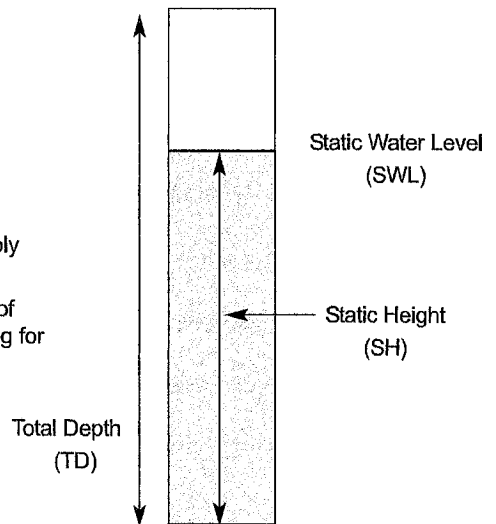
Nominal OD		Standard Dosage	
Inches	MM	Lbs/Ft	Kg/M
2	51	0.07	0.10
3	76	0.15	0.23
4	102	0.27	0.41
5	127	0.43	0.63
6	152	0.61	0.91
8	203	1.1	1.6
10	254	1.7	2.5
12	305	2.5	3.6
14	356	3.3	5.0
16	406	4.4	6.5
18	457	5.5	8.2
20	508	6.8	10.1
22	559	8.2	12.3
24	610	9.8	14.6
26	660	11.5	17.1
30	762	15.3	22.8
34	864	19.7	29.3
36	914	22.1	32.8

- STEP 1: Determine Static Height (TD - SWL)
- STEP 2: Multiply Static Height x table value
- STEP 3:\* Mix NuWell 110 Granular Acid to water and apply

Example: Treat 12" Well, 180 ft TD, SWL = 40 ft

- STEP 1: Static Height = 180 - 40 = 140 ft
- STEP 2: Amt Acid = 140 ft x 2.5 lbs/ft = 350 lbs
- STEP 3:\* Mix 350 lbs NuWell 110 Granular Acid to water and apply

\* Better results can be achieved when the total treatment volume of chemical solution is 1.5 to 2 times the static well volume (allowing for penetration into surrounding formation).



## NuWell® 120 LIQUID ACID

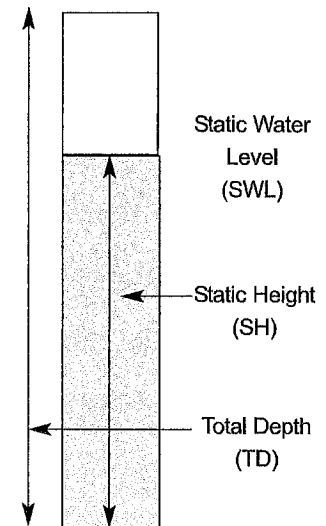
NuWell-120 Liquid Acid can be the optimum basic ingredient for many cleaning applications. It is a liquid food grade phosphoric mineral acid used in well, filter bed and water system equipment cleaning to remove common mineral deposits (Iron, Manganese, Sulfates and Carbonates).

Unlike Hydrochloric (Muriatic) Acid, NuWell-120 Liquid Acid is safer to use, has slower reactivity, and does not give off harmful vapors.

Unlike Hydrochloric (Muriatic) Acid, NuWell-120 Liquid Acid is far less corrosive to metals. (When used with NuWell-310 BioAcid Dispersant a degree of protective metal passivation results).

NuWell-120 Liquid Acid, properly mixed with NuWell-310 BioAcid Dispersant yields a very concentrated, effective, environmentally friendly, economical cleaning chemistry that is readily flushed from the system enabling quick return to service.

Nominal OD		Standard Dosage	
Inches	MM	Gals/Ft	L/M
2	51	0.01	0.17
3	76	0.03	0.38
4	102	0.06	0.68
5	127	0.09	1.07
6	152	0.12	1.54
8	203	0.2	2.7
10	254	0.3	4.3
12	305	0.5	6.1
14	356	0.7	8.4
16	406	0.9	10.9
18	457	1.1	13.8
20	508	1.4	17.1
22	559	1.7	20.7
24	610	2.0	24.6
26	660	2.3	28.9
30	762	3.1	38.4
34	864	4.0	49.3
36	914	4.5	55.3



STEP 1: Determine Static Height of Well:  $SH = TD - SWL$

STEP 2: From Table, determine Std Dosage Value by Diameter

STEP 3: Calculate Volume NuWell 120 Liquid Acid required:  $SH \times \text{Dosage} = (\text{Gal/Liters}) \text{ NW120}$

Example: Treat 12-inch Well, 180 ft Total Depth, Static Level = 40 ft

STEP 1: Static Height =  $(180 \text{ ft} - 40 \text{ ft}) = 140 \text{ ft}$

STEP 2: Dosage Value = 0.5 Gal/Ft (12 inch well)

STEP 3: Vol NuWell 120 Liquid Acid =  $(140 \text{ ft} \times 0.5 \text{ Gal/ft}) = 70 \text{ Gal}$

### Physical Properties, Shipping & Handling

Appearance: Colorless to lightly colored liquid, no odor

Density: 13 Lbs/Gal

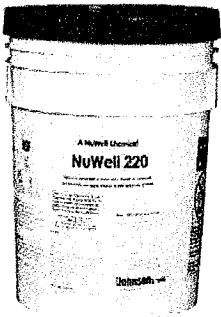
Solubility in Water: Complete

pH: Aqueous approximately 1.00 - 2.00

- NuWell 120 Liquid Acid is a strong acid-base and should not be stored with strong alkaline material or oxidizers
- Dust respirators and goggles should be worn where possibility of dust or mist exists
- Hazardous Class : 8, UNI 805, PGIII
- Can be shipped by UPS ground DOT Label CORROSIVE
- Additional physical and handling data are available on the product MSDS.
- Available in 15 and 55 Gal. containers



## NuWell® 220 DISPERSANT POLYMER



### Description

- Liquid dispersant chemistry specifically designed to remove mud and clay from the well environment more efficiently than other products
- Successfully develop new wells without using phosphate
- Eliminates food source for bacteria (100% water soluble, readily flushed from well)
- Rehabilitate old wells plugged with clays silts and fines
- NSF certified for potable water well use

### Application

#### New Well Systems

Use NuWell 220 Dispersant Polymer as you would phosphates to break down drilling mud and develop wells. For optimal removal of bentonite drilling fluids separately pre-treat the well with 1,500 ppm chlorine to breakdown polyacrylamide polymers that are included in most commercial bentonite products. Determine borehole volume and apply NuWell 220 Dispersant Polymer at the rate of 1 gallon per 500 gallons of water. Vigorously agitate by mechanical means for several hours (approximately 1/2 hour per 20 ft. of intake). If left in overnight, agitate before pump out.

#### Older Well Systems

NuWell 220 Dispersant Polymer removes fine sands, mud and clays that have filled in the gravel pack and well borehole. Use at a rate of 1 gallon per 300 gallons of water (see dosage table). Vigorously agitate by mechanical means, let the solution stand overnight and repeat the agitation the next day before pump out.

### Physical Properties, Shipping & Handling

Appearance	Clear, amber liquid
pH (as shipped)	7.0
Density	10.5 lbs/gal
Freeze point	26°
Solubility	100%

- Not regulated as a hazardous material under 49CFR 172.101, RECRA, SARA and CERCLA, however, in storage or use, avoid contact with strong acids or alkaline-based products
- Can be shipped by UPS ground
- Additional physical and handling data are available on the product MSDS
- NuWell 220 Dispersant Polymer is available in 1, 5, 30 and 55 gallon containers



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# DOSAGE GUIDE

## NuWell® 220 CLAY DISPERSANT

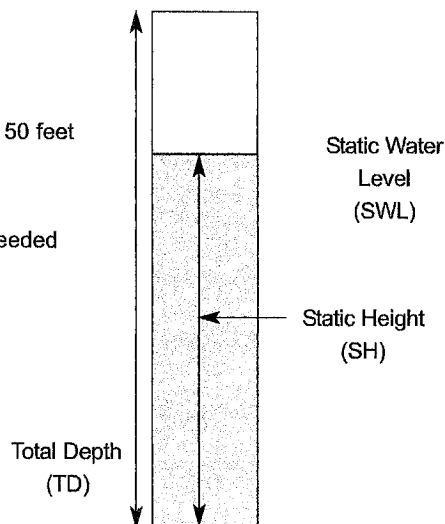
Nominal OD		Gallons / Foot		Liters / Meter of Depth	
Inches	MM	New Well	Old Well	New Well	Old Well
2	51	0.0005	0.0009	0.0068	0.0111
3	76	0.0012	0.0020	0.0152	0.0251
4	102	0.0022	0.0036	0.0270	0.0446
5	127	0.0034	0.0056	0.0422	0.0697
6	152	0.0049	0.0081	0.0608	0.1003
8	203	0.007	0.011	0.081	0.134
10	254	0.010	0.017	0.127	0.209
12	305	0.015	0.024	0.182	0.301
14	356	0.020	0.033	0.248	0.410
16	406	0.026	0.043	0.324	0.535
18	457	0.033	0.055	0.410	0.677
20	508	0.04	0.07	0.51	0.84
22	559	0.05	0.08	0.61	1.01
24	610	0.06	0.10	0.73	1.20
26	660	0.07	0.11	0.86	1.41
30	762	0.09	0.15	1.14	1.88
34	864	0.12	0.19	1.46	2.42
36	914	0.13	0.22	1.64	2.71

Note: Allowance for additional surface volume should be treated with an additional 1-Gal NuWell 220 / 500 Gals of surface system volume (2 liters / cubic meter of surface volume).

- STEP 1: Find Dosage Factor (Old or New Well)
- STEP 2: Multiply Static Height x Dosage Factor
- STEP 3: Mix and apply to well or circulating system

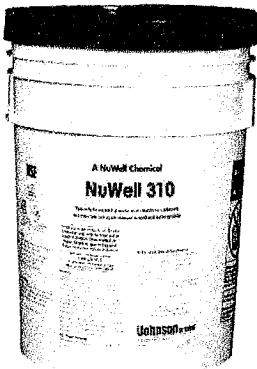
Example: Old 12 inch well, Total Depth = 600 ft, SWL = 50 feet

- 1: Dosage Factor = 0.024 Gal/Ft
- 2: 550 ft x 0.024 Gal/ft = 13 Gal
- 3: 13 Gallons of NuWell 220 Dispersant Polymer needed



Attachment: MX-3100N\_20160513\_163010 (1675 : Mtn. / Rehabilitation of Wells #A1 &#A2)

## NuWell® 310 BIOACID DISPERSANT



### Description

NuWell 310 BioAcid Dispersant is a unique polymeric-acid chemistry that is the most effective product available for breaking down biofilm and dispersing mineral salts. NuWell 310 BioAcid Dispersant provides a considerable boost to any acid-cleaning operation, is readily biodegradable and may be used to treat potable water systems and related equipment. Some unique characteristics are:

- Maintains the acid reaction, holding minerals in suspension at elevated pH's above 3
- Controls sludging by preventing re-precipitation or adhesion for a more complete removal of biologic material during flushing
- Dislodges biofilm masses, associated with IRON OXIDIZING, SULFATE REDUCING and (more prevalent) SLIME-FORMING bacteria, which are not removed by mineral acids alone
- Sequesters iron and inhibits corrosion on metal surfaces. The iron sequestering allows the chemical solution to remove heavy accumulation of iron compounds, which often account for the fouling of water systems
- Protects all forms of metal in the system and will not attack plastic, neoprene, or other synthetic materials eliminating the need for acid inhibitors
- Provides passivation of metals when used with Phosphoric acid
- NSF certified for cleaning potable water wells, pipelines and filter systems

### Application

NuWell 310 BioAcid Dispersant is designed to mix with acid solutions to improve the acid cleaning reaction. Standard dosage is 3% (1%-2% for maintenance). Dosage of NuWell 310 BioAcid Dispersant can range from 0.5% to 5% (by weight) of treatment volume. Optimum concentration depends on the type and severity of the deposit. Johnson recommends the client submit well construction and performance history along with water samples for lab analysis to properly determine dosage on large municipal and industrial wells.

1. Best application is to surface prepare a solution of water, acid and NuWell 310 BioAcid Dispersant equal to approximately 40% of the total static volume.
2. Into a vessel of appropriate size, first add water, then acid, then NuWell 310 BioAcid Dispersant. (**Note: NEVER add water to acid! Also: DO NOT mix NuWell 310 BioAcid directly to commercial concentrations of liquid acid as polymer destruction may occur.**)
3. The surface-solution should be placed evenly across the intake zone. Placement methods should assure contact with affected areas at the desired concentration. Agitation of the cleaning solution will greatly enhance the effectiveness of the cleaning.
4. The solution should remain in contact for 18 to 48 hours, depending on the nature of the deposit. The pH should be monitored and kept below 3.0 during treatment. If additional acid is needed (to lower pH) add an amount equal to approximately 20% of the initial amount of acid applied.
5. Discharge the acid solution from the well, neutralize at the surface and dispose in accordance with local regulations.

### Physical Properties, Shipping & Handling

Appearance :	Amber Liquid	Solubility :	20% by weight @ 20 C.
Density :	Approx. 10 lbs/gal	pH (as shipped) :	2.3



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ANSISF 60

- NuWell 310 BioAcid Dispersant is an acid-based liquid. Avoid contact with strong alkaline materials or oxidizers. Use of protective clothing is recommended especially where the possibility of inhalation exists. Most acids and alkaline material will not affect NuWell 310 BioAcid Dispersant at concentrations below 25%
- Not regulated as a hazardous material under 49CFR 172.101, RECRA, SARA and CERCLA
- Can be shipped by UPS ground
- Additional physical and handling data are available on the product MSDS
- NuWell 310 BioAcid Dispersant is available in 1, 5, 30, and 55 gallon containers

## DOSAGE GUIDE

### NuWell® 310 BIOACID DISPERSANT

Nominal OD		Well Volume		Standard Dosage - 3%	
Inches	MM	Gal/Ft	Liters/M	Gal/Ft	Liters/M
2	51	0.16	2	0.004	0.051
3	76	0.37	5	0.009	0.114
4	102	0.65	8	0.016	0.203
5	127	1.02	13	0.026	0.317
6	152	1.47	18	0.037	0.456
8	203	2.62	32	0.07	0.81
10	254	4.09	51	0.10	1.27
12	305	5.89	73	0.15	1.82
14	356	8.02	99	0.20	2.48
16	406	10.47	130	0.26	3.24
18	457	13.25	164	0.33	4.10
20	508	16.36	203	0.41	5.07
22	559	19.80	245	0.49	6.13
24	610	23.56	292	0.59	7.30
26	660	27.65	343	0.69	8.56
30	762	36.82	456	0.92	11.40
34	864	47.29	586	1.18	14.64
36	914	53.01	657	1.32	16.42

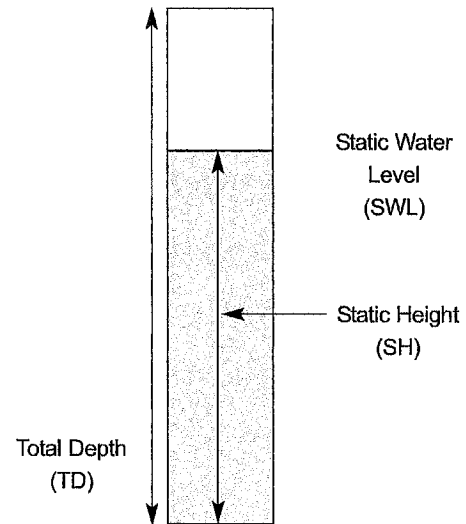
Note: Standard Dosage is for well rehabilitation. For routine maintenance, reduce dosage by 30%-50%.

- STEP 1: Determine Static Height of water in well  
 STEP 2: Multiply height x Dosage above  
 STEP 3:\* Mix NuWell 310 BioAcid Dispersant into acid solution and apply to well

Example: 12 inch well, Total Depth=600 ft, SWL=50 ft

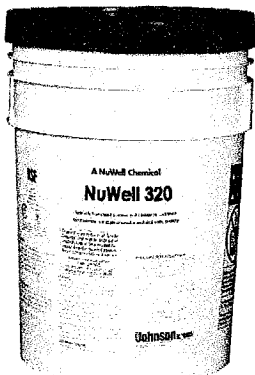
- STEP1: Static Height = 600 - 50 = 550 ft  
 STEP2: 550 ft x 0.15 Gal/ft = 82.5 Gal  
 STEP3\*: 83 Gal NuWell 310 BioAcid Dispersant needed

\* Better results can be achieved when the total treatment volume of chemical solution is 1.5 to 2 times the static well volume (allowing for penetration into surrounding formation)





## NuWell® 320 BIOCAUSTIC DISPERSANT



### Description

NuWell 320 Biocaustic Dispersant designed to enhance solubility of minerals and biological debris when used with caustic (alkaline) products for cleaning wells, potable water distribution lines or other structural systems. Water systems that are heavily fouled with bacteria are often cleaned with a strong caustic cleaner to help dissolve the biological matrix. While the caustic reaction effectively dissolves the polysaccharide exopolymer material (slime secreted by the bacteria), the high pH decreases the solubility of the mineral constituents causing precipitation of mineral-deposits in the area being cleaned. The unique characteristics of NuWell 320 Biocaustic Dispersant are:

- Prevents the precipitation of minerals that can clog openings while cleaning up the biological plugging
- Controls the sludge by preventing re-precipitation or adhesion for more complete removal of biologic material during flushing
- Dislodges biofilm masses, associated with Iron OXIDIZING, SULFATE REDUCING and (more prevalent) SLIME-FORMING bacteria, which are not completely removed by caustic solutions alone
- Increases the suspension of partially-dissolved minerals, silts, and bacterial slime
- Completely soluble in strong alkaline solutions with a pH of 7 to 14

### Application

NuWell 320 Biocaustic Dispersant is typically used at a concentration of approximately 1.5 to 3% by weight of the treatment volume in the well or system being treated. In the case of pipe lines or storage tanks, the actual volume of cleaning solution being used should be the volume used for calculation. If the cleaning solution is to be surface blended then added to the well or water system, the caustic should be diluted at least one part caustic to nine parts water prior to the addition of the NuWell 320 Biocaustic Dispersant. Upon completion of cleaning, the caustic solution should be neutralized on the surface and disposed in accordance with the appropriate regulations.

### Physical Properties, Shipping & Handling

Appearance	Amber Liquid
pH (as shipped)	8.4
Density	Approx. 9.5 lbs/gal
Solubility	100%

- This product is not considered dangerous and does not require special handling or disposal. However, in storage or use, avoid contact with strong acids or alkaline-based products. Most acids and alkaline material will not affect NuWell 320 Biocaustic Dispersant at concentrations below 25%
- Not regulated as a hazardous material under 49CFR 172.101, RECRA, SARA and CERCLA
- Can be shipped by UPS ground
- Additional physical and handling data are available on the product MSDS
- NuWell 320 Biocaustic Dispersant is available in 1, 5, 30, and 55 gallon containers



Certified to  
ANSI/NSF 60

# DOSAGE GUIDE

## NuWell® 320 BIOCAUSTIC DISPERSANT

Nominal OD		Well Volume		Standard Dosage - 3%	
Inches	MM	Gal/Ft	Liters/M	Gal/Ft	Liters/M
2	51	0.16	2	0.004	0.051
3	76	0.37	5	0.009	0.114
4	102	0.65	8	0.016	0.203
5	127	1.02	13	0.026	0.317
6	152	1.47	18	0.037	0.456
8	203	2.62	32	0.07	0.81
10	254	4.09	51	0.10	1.27
12	305	5.89	73	0.15	1.82
14	356	8.02	99	0.20	2.48
16	406	10.47	130	0.26	3.24
18	457	13.25	164	0.33	4.10
20	508	16.36	203	0.41	5.07
22	559	19.80	245	0.49	6.13
24	610	23.56	292	0.59	7.30
26	660	27.65	343	0.69	8.56
30	762	36.82	456	0.92	11.40
34	864	47.29	586	1.18	14.64
36	914	53.01	657	1.32	16.42

Note: Standard Dosage is for Well Rehabilitation. For routine maintenance, reduce dosage by 30%-50%.

STEP 1: Determine Height of Static Water in Well

STEP 2: Multiply height X Dosage above

STEP 3:\* Mix NuWell 320 Biocautic Dispersant into caustic solution and apply to well

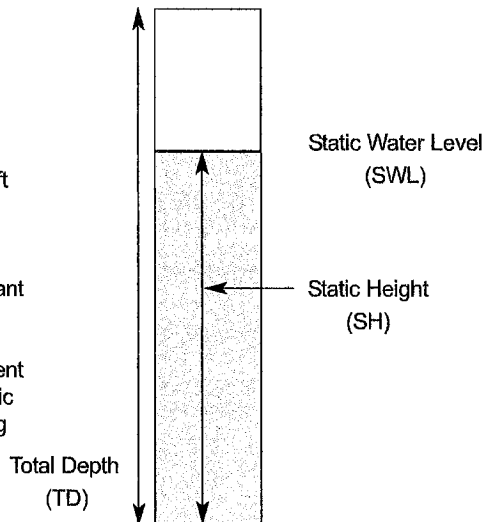
Example: 12 inch well, Total Depth=600 ft, SWL=50 ft

STEP1: Static Height = 600 - 50 = 550 ft

STEP2: 550 ft x 0.15 Gal/ft = 82.5 Gal

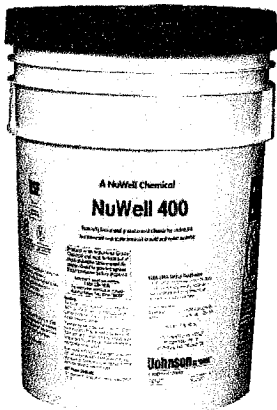
STEP3:\* 83 Gal NuWell 320 Biocautic Dispersant needed

\* Better results can be achieved when the total treatment volume of chemical solution is 1.5 to 2 times the static well volume (allowing for penetration into surrounding formation).



Attachment: MX-3100N\_20160513\_163010 (1675 : Mtn. / Rehabilitation of Wells #A1 &#A2)

## NuWell® 400 NON-IONIC SURFACTANT



### Description

NuWell 400 Non-Ionic Surfactant is a non-ionic surfactant capable of use over a wide pH range. The non-ionic nature assures that it will not react directly or interfere with any other chemistry being used. The surface active properties are excellent for improving penetration of hard deposits or for wetting surfaces to be cleaned.

NuWell 400 Non-Ionic Surfactant may also be used to improve flow characteristics of heavy fluid or muds used in well construction. By changing the surface tension NuWell 400 Non-Ionic Surfactant will improve clean up of oil or biologically fouled areas.

### Application

NuWell 400 Non-Ionic Surfactant is used at the rate of 1 gallon per 1000 gallons of water in the system to be cleaned or the total gallons of cleaning solution to be used. If the system is being cleaned for oil or heavy biofouling, then use NuWell 400 Non-Ionic Surfactant at the rate of 1 gallon per 500 gallons.

### Physical Properties, Shipping and Handling

Appearance	Straw Colored Liquid
Density	9.4 lbs/gal
Volatility	25%
pH	(as drummed) 8.5
Freeze Point	26° F
Solubility	100% in water

- Not regulated as a hazardous material under 49CFR 172.101 RCRA, RCRA 40CFR 261, SARA and CERCLA
- This product is not contained in any of the above listings; no reportable inventory listings are required; and waste from this product is not considered a hazardous substance
- The product is not considered dangerous and requires no special handling. Avoid contact with strong acids or alkaline-based products
- Additional physical and handling data are available on the product MSDS
- NuWell 400 Non-Ionic Surfactant is available in 1,5,30 and 55 gallon containers



# DOSAGE GUIDE

## NuWell® 400 NON-IONIC SURFACTANT

Nominal OD		Gallons / Ft		Liters / Meter	
Inches	MM	Standard Dose	Heavy Oils	Standard Dose	Heavy Oils
2	51	0.0003	0.0006	0.0041	0.0081
3	76	0.0007	0.0014	0.0091	0.0182
4	102	0.0012	0.0024	0.0162	0.0324
5	127	0.0019	0.0038	0.0253	0.0507
6	152	0.0027	0.0055	0.0365	0.0730
8	203	0.0036	0.0073	0.0486	0.0973
10	254	0.0057	0.0114	0.0760	0.1520
12	305	0.0082	0.0164	0.1094	0.2189
14	356	0.0111	0.0223	0.1490	0.2979
16	406	0.0145	0.0291	0.1946	0.3892
18	457	0.0184	0.0368	0.2463	0.4925
20	508	0.023	0.045	0.304	0.608
22	559	0.027	0.055	0.368	0.736
24	610	0.033	0.065	0.438	0.876
26	660	0.038	0.077	0.514	1.028
30	762	0.051	0.102	0.684	1.368
34	864	0.066	0.131	0.879	1.757
36	914	0.074	0.147	0.985	1.970

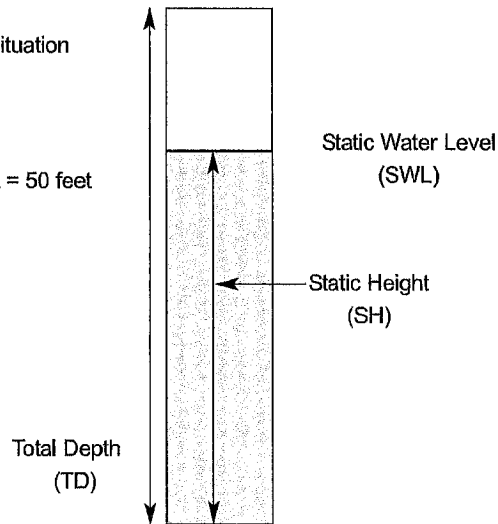
Note: Allowance for additional surface volume should be treated with an additional 1-Gal NuWell 400 /1000 Gals of surface system volume (1 liter / cubic meter of surface volume).

STEP 1: Determine Static Height of water in well  
 STEP 2: Find Dosage Factor for Std or (Heavy Oil) Situation

STEP 3: Multiply Static Height x Dosage Factor  
 STEP 4: This is the amount needed to treat a well.

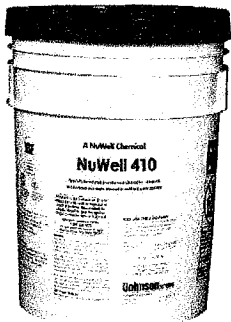
Example: Old 12 inch well, Total Depth = 600 ft, SWL = 50 feet with heavy accumulation of turbine oil.

- 1: Height = (600 - 50) = 550 ft
- 2: Dosage Factor = 0.0164 Gal/Ft
- 3: 550 ft x 0.0164 Gal/ft = 9.0 Gal
- 4: Add 9 gal into the cleaning solution.



Attachment: MX-3100N\_20160513\_163010 (1675 : Mtn. / Rehabilitation of Wells #A1 &#A2)

## NuWell® 410 CHLORINE ENHANCER



### Description

- Use with hypochlorite to increase effectiveness of chlorination
- Maintains pH in well at 6.5 during chlorination, increasing hypochlorous acid
- Increases bacteriological activity by over 100 times that of hypochlorite
- Contains a penetrant to allow deeper and more complete disinfection
- Controls calcium in hard water to increase the effectiveness of calcium hypochlorite
- NSF certified for potable water well use

### Application

Laboratory testing and field trials demonstrate that successful well chlorination is achieved with a chlorine concentration of 200 ppm. The following procedures are recommended for using NuWell 410 Chlorine Enhancer with chlorine concentrations of 200 ppm.

1. From p.17, determine the static volume, the amount of NuWell 410 Chlorine Enhancer and the amount of chlorine product necessary to treat the well. (Consideration should be given to increasing this volume by 2-4 times to allow sufficient disinfectant solution to reach all areas of the well and borehole that can harbor coliform bacteria or other contaminating organisms.)
2. In a tank on the surface, add the amount of NuWell 410 Chlorine Enhancer to water as estimated from dosage guide. Mix the solution and measure the pH. The pH of the solution should be between 4.5 and 5 before adding the hypochlorite. All mixing should be done in a well ventilated area. Caution: When chlorine is placed in an acid pH of 5.0 or lower chlorine gas can be released. When the hypochlorite solution or powder is added, the pH will rise immediately preventing any further chlorine release, but you should add the hypochlorite quickly and move away until the pH rises.
3. Place the chlorine solution in the well evenly washing down the upper levels of the well before you place the solution throughout the water column. The mixture should be agitated or surged to ensure good coverage. Let the solution stand in the well for a period of 5 to 12 hours. Additional agitation prior to removal is beneficial. NuWell 410 Chlorine Enhancer is buffered to hold the pH at the optimum level, however if additional NuWell 410 Chlorine Enhancer is required, blend in a volume equal to 25% of the original mixed volume and add carefully so that the pH does not drop below 5.0 resulting in release of chlorine gas.
4. Pump the solution to the surface, neutralize using NuWell 500 ChlorOut and discharge in accordance with local rules and regulations.

### Physical Properties, Shipping & Handling

Appearance	clear, light amber liquid
Density	9.3 lbs/gal
Volatility	non-volatile
pH (as shipped)	3.08
Solubility	100%

- This product is not considered dangerous and does not require special handling or disposal. Avoid contact with strong acids or alkaline-based products
- Not regulated as a hazardous material under 49CFR 172.101, RECRA, SARA and CERCLA
- Can be shipped by UPS ground
- Additional physical and handling data are available on the product MSDS
- NuWell 410 Chlorine Enhancer is available in 1, 5, 30 and 55 gallon containers



Certified to  
ANSI/NSF 60

# DOSAGE GUIDE

## NuWell® 410 CHLORINE ENHANCER

Amounts of NuWell 410 Chlorine Enhancer and chlorine disinfectant needed per foot of static well depth.

Nominal Well Size	Well Volume in (Gal/Ft)	Amount of NuWell 410 (Quarts/Ft)	Amount of Chlorine Product		
			CaHypocl-65% (Lbs/Ft)	SodHyp-12% (Gal/Ft)	SodHyp-5% (Gal/Ft)
2	0.16	0.0007	0.0004	0.0003	0.0006
3	0.37	0.0015	0.0010	0.0006	0.0014
4	0.65	0.0026	0.0017	0.0011	0.0025
5	1.02	0.0041	0.0027	0.0017	0.0039
6	1.47	0.0059	0.0038	0.0025	0.0056
8	2.62	0.010	0.007	0.004	0.010
10	4.09	0.016	0.011	0.007	0.016
12	5.89	0.024	0.015	0.010	0.022
14	8.02	0.032	0.021	0.014	0.030
16	10.47	0.042	0.027	0.018	0.040
18	13.25	0.053	0.034	0.023	0.050
20	16.36	0.07	0.043	0.028	0.062
22	19.80	0.08	0.051	0.034	0.075
24	23.56	0.09	0.061	0.040	0.090
26	27.65	0.11	0.072	0.047	0.105
28	32.07	0.13	0.083	0.055	0.122
30	36.82	0.15	0.096	0.063	0.140
32	41.89	0.17	0.109	0.071	0.159
34	47.29	0.19	0.123	0.080	0.180
36	53.01	0.21	0.138	0.090	0.201
40	65.45	0.26	0.170	0.111	0.249
46	86.56	0.35	0.225	0.147	0.329

Note: Amounts based on application of 200-ppm chlorine concentration into well water with Alkalinity of 100-ppm.

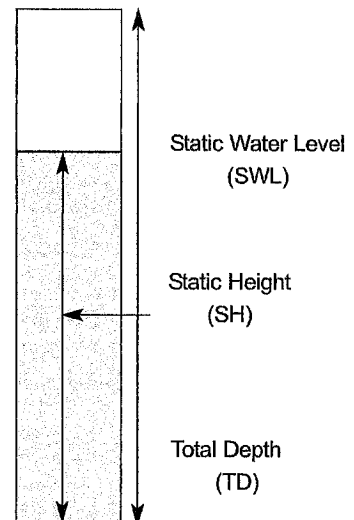
If well-water alkalinity, or the desired chlorine dosage level are greater than the standard values in the above table, adjust the amount of Chlorine Enhancer and the amount of hypochlorite concentrations as shown below.

NuWell 410 Chlorine Enhancer	Hypochlorite
Amount above x (Alk/100)	Amount above x (desired concentration/200)

- Step 1: Determine Static Height (TD - SWL)
  - Step 2: Multiply Amt Chlorine Enhancer from table x Static Ht
  - Step 3: Determine Amount of hypochlorite product from table above
  - Step 4: Surface Batch = Water + NuWell 410 Chlorine Enhancer + Hypochlorite
- Example: Disinfect a 16 inch well, TD = 300 ft, SWL = 50 ft with Calcium Hypochlorite 65% active

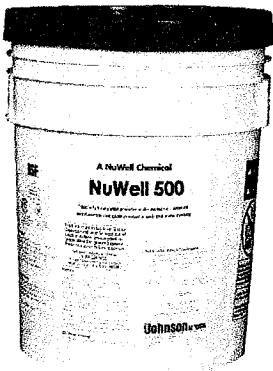
- Step 1: Static Ht = (300ft - 50ft) = 250 ft
- Step 2: Amt Enhancer = 250 ft x 0.042 qts/ft = 11 quarts
- Step 3: Amt Hyp = 250 ft x 0.027 lbs/ft = 6.8 lbs.
- Step 4: Batch: 250 ft x 10.47 gal/ft = 2,618 gal water (2,618 gal + 11 quarts + 6.8 lbs)

TIP: Optimum results are obtained when the surface solution is 2-4 times the well volume, providing sufficient hypochlorite-ions to disperse into the gravel pack and immediate surrounding formation where coliform organisms exist. (For large wells this may not be practical and multiple batches with proportions of chemistry may be required to achieve the desired results.)



Attachment: MX-3100N\_20160513\_163010 (1675 : Mtn. / Rehabilitation of Wells #A1 &#A2)

## NuWell® 500 CHLOROUT



### Description:

- Use to neutralize chlorine solutions prior to disposal
- Concentrated crystal that is easy to dissolve for fast neutralization
- Safe to handle
- Easy to use

### Application:

NuWell 500 ChlorOut is used on the surface after the well or system discharge has been pumped into a tank or holding pond as follows:

1. Measure the chlorine level in the water and calculate the dosage of NuWell 500 ChlorOut needed for neutralization as indicated on the table.
2. Mix NuWell 500 ChlorOut in with the chlorinated water and the chlorine levels will neutralize almost immediately. Where dechlorinating large volumes, dissolve NuWell 500 ChlorOut in one gallon of water for every pound of NuWell 500 ChlorOut required. Some heat is generated upon dilution.
3. Discharge to an approved outlet.

### Physical Properties, Shipping & Handling:

Appearance	Odorless, coarse white to off white crystal
pH (7.5% solution)	8.6
Density	Approx. 80 lbs/cu.ft.
Solubility	100% in water

- This product is not considered dangerous and does not require special handling or disposal
- Not regulated as a hazardous material under 49CFR 172.101, RECRA, SARA and CERCLA
- Can be shipped by UPS ground
- Additional physical and handling data are available on the product MSDS
- NuWell 500 ChlorOut is available in 10 lb containers

Chlorine PPM at Discharge	Batch Volume To be Treated							
	Gallons				Cubic Meters*			
	100	250	500	1000	1	2	4	5
20	0.02	0.05	0.10	0.20	0.02	0.05	0.10	0.12
40	0.04	0.10	0.20	0.40	0.05	0.10	0.19	0.24
60	0.06	0.15	0.30	0.60	0.07	0.14	0.29	0.36
80	0.08	0.20	0.40	0.80	0.10	0.19	0.38	0.48
100	0.10	0.25	0.50	1.00	0.12	0.24	0.48	0.60
120	0.12	0.30	0.60	1.20	0.14	0.29	0.57	0.71
140	0.14	0.35	0.70	1.40	0.17	0.33	0.67	0.83
160	0.16	0.40	0.80	1.60	0.19	0.38	0.76	0.95
180	0.18	0.45	0.90	1.80	0.21	0.43	0.86	1.07
200	0.20	0.50	1.00	2.00	0.24	0.48	0.95	1.19
250	0.25	0.63	1.25	2.50	0.30	0.60	1.19	1.49
300	0.30	0.75	1.50	3.00	0.36	0.71	1.43	1.79
350	0.35	0.88	1.75	3.50	0.42	0.83	1.67	2.08
400	0.40	1.00	2.00	4.00	0.48	0.95	1.90	2.38
450	0.45	1.13	2.25	4.50	0.54	1.07	2.14	2.68
500	0.50	1.25	2.50	5.00	0.60	1.19	2.38	2.98
	Values are Lbs of NuWell 500 / Batch				Values are Kg of NuWell 500 / Batch			

NOTE: For best results, first dissolve NuWell 500 ChlorOut in water then add to the well discharge as a solution. (About 1 lb NuWell 500 ChlorOut to 1 gallon water) \*1 cubic meter = 1,000 liters

The above table shows the amount (Lbs or Kg) of NuWell 500 ChlorOut that is necessary to mix into various volumes of discharge water to neutralize a specific chlorine concentration level. Example: To neutralize a 1000 gal. tank of well discharge with a chlorine concentration of 180 ppm, dissolve 1.8 lbs of NuWell 500 ChlorOut into approximately 2 gal. water then add to the tank.



## PRODUCT APPLICATION GUIDE

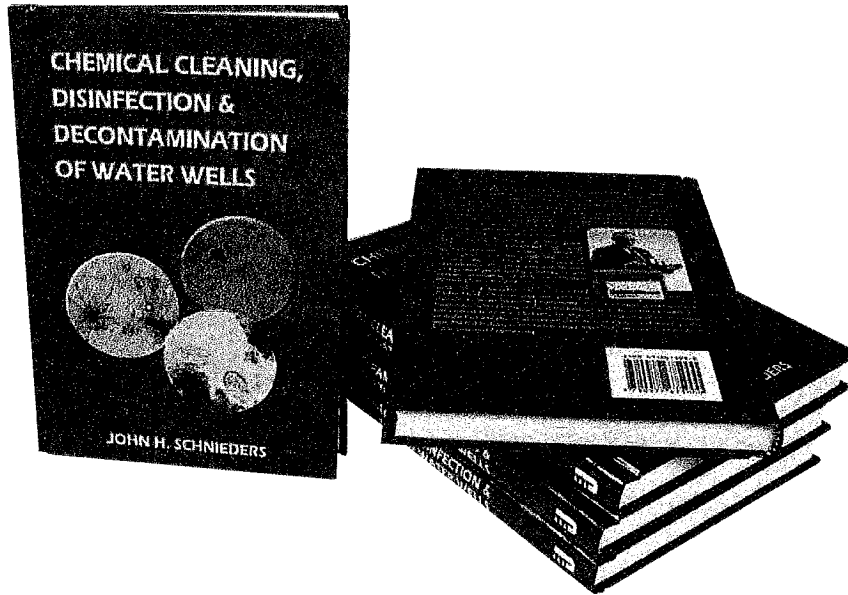
PRODUCT	Code	Carbonate Scale Removal	Sulfate Scale Removal	Iron / Manganese Scale Removal	Biofilm Removal	Hydro-carbon Removal	Drill Mud Breakdown	Remove Clays & Bentonite	Buffer Chlorine	Neutralize Chlorine
NuWell® 100 Pelletized Acid	A	Good	Fair	Fair	Poor	Poor	NO	NO	Fair	NO
		(A+E) Very Good	(A+E) Very Good	(A+E) Very Good	(A+E) Good	(A+G) Fair-Good				
NuWell 110 Granular Acid	B	Good	Fair	Fair	Poor	Poor	NO	NO	Fair	NO
		(B+E) Very Good	(B+E) Very Good	(B+E) Very Good	(B+E) Good	(B+G) Fair-Good				
NuWell 120 Liquid Acid	C	Good	Good	Good	Poor	Poor	NO	NO	Good	NO
		(C+E) Very Good	(C+E) Very Good	(C+E) Very Good	(C+E) Very Good	(C+E+G) Good				
NuWell 220 Clay Dispersant	D	NO	NO	NO	NO	NO	Fair	Good	NO	NO
							(D+X) Very Good			
NuWell 310 BioAcid Dispersant	E	Poor	Poor	Poor	Good	Poor	NO	Fair	Good	NO
		(C+E) Very Good	(C+E) Very Good	(C+E) Very Good	(C+E) Very Good	(C+E) Fair		(E+G) Good		
NuWell 320 BioCaustic Dispersant	F	NO	NO	NO	Fair	Poor	NO	NO	NO	NO
					(Caustic+F) Very Good					
NuWell 400 Non-ionic Surfactant	G	Add Surfactant to NW-100, NW-110 or NW-120, NW-310 or NW-320 to improve penetration of cleaning chemistry and hydrocarbon solubility.					NO	NO	NO	NO
NuWell 410 Chlorine Enhancer	H	NO	NO	Good	Fair	Fair-Good	NO	NO	Very Good	NO
				(especially iron hydroxides)						
NuWell 500 ChlorOut	I	NO	NO	NO	NO	NO	NO	NO	NO	Very Good
	X	Commercial sodium or calcium hypochlorite up to 1200 ppm to facilitate polyacrylamide breakdown.								

## PRODUCT COMPATIBILITY GUIDE

PRODUCT	NuWell 100	NuWell 110	NuWell 120	NuWell 220	NuWell 310	NuWell 320	NuWell 400	NuWell 410	NuWell 500
NuWell 100 Pelletized Acid		Yes	Yes	NO	Yes	NO	Yes	NO	NO
NuWell 110 Granular Acid	Yes		Yes	NO	Yes	NO	Yes	NO	NO
NuWell 120 Liquid Acid	Yes	Yes		NO	Yes	NO	Yes	NO	NO
NuWell 220 Clay Dispersant	NO	NO	NO		NO	Yes	NO	NO	NO
NuWell 310 BioAcid Dispersant	Yes	Yes	Yes	NO		NO	Yes	Yes	NO
NuWell 320 BioCaustic Dispersant	NO	NO	NO	Yes	NO		Yes	NO	NO
NuWell 400 Non-ionic Surfactant	Yes	Yes	Yes	NO	Yes	Yes		Yes	NO
NuWell 410 Chlorine Enhancer	NO	NO	NO	NO	Yes	NO	Yes		NO
NuWell 500 ChlorOut	NO	NO	NO	NO	NO	NO	NO	NO	
	YES - Products blend well together for enhanced performance.								
	NO - Blending of these products in not recommended.								

Note: Johnson Screens, Inc. assumes no liability if the recommended dosage and application instructions are not followed.





## A COMPREHENSIVE OVERVIEW OF CHEMICAL USE IN WATER WELLS

*The Chemical Cleaning, Disinfection and Decontamination of Water Wells* is a compact but complete assessment of the important place certain chemicals have in modern water treatment and water system construction and maintenance programs.

Included in this text are complete descriptions of nearly every chemical frequently used in water supply applications. The focus is on effective, efficient use of these chemicals singly or in combination to achieve better well rehabilitation, water system cleaning and water

quality treatment. Diagrams, formulas, mix ratios and other technical data are included. Also included is a discussion of the proper handling techniques for each chemical and, where appropriate, clear warnings about possible hazards and the conditions that can cause them.

The text is in a convenient 6 3/8" x 9 1/4" format for taking on job sites as well as classrooms or labs. Contact Johnson Screens for ordering information.

**Johnson** screens®

A Weatherford Company

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# Dallas City Council

129 East Memorial Drive, Dallas, GA 30132

**DRAFT**

**TO:** City Council

**From:** City Hall, Kendall Smith

**Meeting:** May 16,2016 05:00 PM

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## Intergovernmental Contract PC Indust Devel Refunding Rev Bonds

### Summary:

To approve the execution and delivery of an Intergovernmental Contract and related matters in connection with the issuance of the Paulding County Industrial Development Refunding Revenue Bonds (City of Dallas Water and Sewer Projects), Series 2016, in the aggregate principal amount \$9,300,000, to be issued for the purpose of refunding the Authority's outstanding Revenue Bonds (Federally Taxable - Recovery Zone Economic Development Bonds) (City of Dallas Project), Series 2010 and outstanding loans of the City from the Georgia Environmental Finance Authority, in order to effect a savings on the debt service requirements of the City's now outstanding indebtedness.

### Recommendation:

### Financial Impact:

Review:

Kendall Smith Pending

Dallas City Council Pending 05/16/2016 5:00 PM

INTERGOVERNMENTAL CONTRACT

by and between

PAULDING COUNTY INDUSTRIAL BUILDING AUTHORITY

and

CITY OF DALLAS, GEORGIA

Dated as of \_\_\_\_\_ 1, 2016

Relating to the

Paulding County Industrial Building Authority  
Refunding Revenue Bonds  
(City of Dallas Water and Sewer Projects), Series 2016

The rights and interest of Paulding County Industrial Building Authority (the “Authority”) in the revenues and receipts derived from this Intergovernmental Contract have been assigned and pledged under a Bond Resolution, adopted by the Authority on May 3, 2016, as supplemented on \_\_\_\_\_, 2016.

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SCHEDULE 1 - Contract Payments

INTERGOVERNMENTAL CONTRACT

THIS INTERGOVERNMENTAL CONTRACT (this “Contract”) is entered into as of \_\_\_\_\_ 1, 2016, by and between the PAULDING COUNTY INDUSTRIAL BUILDING AUTHORITY (the “Authority”), a public body corporate and politic and an instrumentality of the State of Georgia, and the CITY OF DALLAS, GEORGIA (the “City”), a municipal corporation of the State of Georgia.

WITNESSETH:

WHEREAS, the Paulding County Industrial Building Authority (the “Authority”) was duly created and is validly existing pursuant to the an amendment to the Constitution of the State of Georgia (1962 Ga. Laws p. 1176 *et seq.*, as continued by Ga. L. 1986, p. 5690 *et seq.*) (the “Amendment”); and

WHEREAS, under the Amendment and the Revenue Bond Law (O.C.G.A. § 36-82-60 *et seq.*, as amended), the Authority has, among others, the power (a) to issue revenue bonds and use the proceeds for the purpose of paying all or part of the cost of any “undertaking” including systems, plants, works, instrumentalities, and properties (i) used or useful in connection with the obtaining of a water supply and the conservation, treatment, and disposal of water for public and private uses, and (ii) used or useful in connection with the collection, treatment, and disposal of sewage, waste, and storm water; together with all parts of any such undertaking and all appurtenances thereto, including lands, easements, rights in land, water rights, contract rights, franchises, approaches, dams, reservoirs, generation stations, sewage disposal plants, intercepting sewers, trunk connection and other sewer and water mains, filtration works, pumping stations, and equipment; (b) to issue revenue bonds to refund or refinance all outstanding revenue bonds, obligations or debt, against any existing undertaking, and (c) to make and execute contracts and other instruments necessary to exercise the powers of the Authority; and

WHEREAS, pursuant to the Constitution and laws of the State of Georgia, the City is authorized and permitted to provide water and sewerage services or to contract with the Authority for such purpose; and

WHEREAS, Article IX, Section III, Paragraph I(a) of the Constitution of the State of Georgia authorizes, among other things, any county, municipality or other political subdivision of the State of Georgia to contract, for a period not exceeding fifty (50) years, with another county, municipality or political subdivision or with any other public agency, public corporation or public authority for joint services, for the provision of services, or for the provision or separate use of facilities or equipment, provided that such contract deals with activities, services or facilities which the contracting parties are authorized by law to undertake or to provide; and

WHEREAS, pursuant to the Constitution and laws of the State of Georgia, and a resolution of the Authority adopted on July 29, 2010, as supplemented on August 18, 2010, the Authority issued its Revenue Bonds (Federally Taxable – Recovery Zone Economic Development Bonds) (City of Dallas Project), Series 2010 (the “Series 2010 Bonds”), in the

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original aggregate principal amount of \$6,445,000, for the purpose of providing funds to (i) pay the costs of making renovations, additions, extensions and expansions to a portion of the City’s water and sewerage system (the “2010 Project”), (ii) pay capitalized interest on the Series 2010 Bonds, and (iii) pay the costs of issuing the Series 2010 Bonds; and

WHEREAS, the Series 2010 Bonds are secured by a lien on an Intergovernmental Contract, dated as of August 1, 2010, between the Authority and the City (the “2010 Contract”), and the payments to be made by the City thereunder; and

WHEREAS, the Series 2010 Bonds, the security therefore (including the 2010 Contract and the payments to be made thereunder), and the purposes for which the proceeds of the Series 2010 Bonds were used (including the 2010 Project) have been previously validated by an order of the Superior Court of Paulding County issued in Civil Action Number 10-CV-4624-TB; and

WHEREAS, the City currently has a loan from the Georgia Environmental Finance Authority, successor by name change to the Georgia Environmental Facilities Authority, incurred in 1997 (Loan #97L83WS), currently outstanding in the principal amount of approximately \$ \_\_\_\_\_ (the “1997GEFA Loan”); and

WHEREAS, the 1997 GEFA Loan financed, in whole or in part, the cost of certain additions, extensions and improvements to the City’s water and sewerage system (the “1997 GEFA Project”); and

WHEREAS, the City currently has a loan from the Georgia Environmental Finance Authority, successor by name change to the Georgia Environmental Facilities Authority, incurred in 2002 (Loan #2002LE13WQ), currently outstanding in the principal amount of approximately \$ \_\_\_\_\_ (the “2002 GEFA Loan”); and

WHEREAS, the 2002 GEFA Loan financed, in whole or in part, the cost of certain additions, extensions and improvements to the City’s water and sewerage system (the “2002 GEFA Project”); and

WHEREAS, the City currently has a loan from the Georgia Environmental Finance Authority, successor by name change to the Georgia Environmental Facilities Authority, incurred in 2005 (Loan #2005L56WJA), currently outstanding in the principal amount of approximately \$ \_\_\_\_\_ (the “2005A GEFA Loan”); and

WHEREAS, the 2005A GEFA Loan financed, in whole or in part, the cost of certain additions, extensions and improvements to the City’s water and sewerage system (the “2005A GEFA Project”); and

WHEREAS, the City currently has a loan from the Georgia Environmental Finance Authority, successor by name change to the Georgia Environmental Facilities Authority, incurred in 2005 (Loan #2005L56WJB), currently outstanding in the principal amount of

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approximately \$\_\_\_\_\_ (the “2005B GEFA Loan” and, together with the 1997 GEFA Loan, the 2002 GEFA Loan and the 2005A GEFA Loan, the “GEFA Loans”); and

WHEREAS, the 2005B GEFA Loan financed, in whole or in part, the cost of certain additions, extensions and improvements to the City’s water and sewerage system (the “2005B GEFA Project” and, together with the 1998 GEFA Project, the 2002 GEFA Project and the 2005A GEFA Projects, the “GEFA Projects”); and

WHEREAS, after careful study and investigation, the Authority proposes to issue its Refunding Revenue Bonds (City of Dallas Water and Sewer Projects), Series 2016, in the aggregate principal amount of \$\_\_\_\_\_ (the “Series 2016 Bonds”) for the purpose of providing funds to (a) refund all of the outstanding Series 2010 Bonds (the “Refunded Series 2010 Bonds”), (b) refund and prepay the GEFA Loans, and (c) pay the costs of issuing the Series 2016 Bonds; and

WHEREAS, the Authority and the City propose to enter into this Contract, pursuant to which the Authority will agree, among other things, to issue the Series 2016 Bonds for the purpose of providing funds to refund the Refunded Series 2010 Bonds and refund and prepay the GEFA Loans and to provide certain water and sewerage facilities and services to the City, and the City will agree to make contract payments in stated amounts which are sufficient to pay when due the principal of and interest on the Series 2016 Bonds; and

NOW, THEREFORE, in consideration of the premises and undertakings as hereinafter set forth and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:



## ARTICLE 1.

### DEFINITIONS AND RULES OF CONSTRUCTION

#### Section 1.1. Definitions.

In addition to the words and terms elsewhere defined in this Contract and the Bond Resolution (as defined below), the following words and terms as used in this Contract shall have the following meanings unless the context or use indicates another or different meaning or intent and such definitions shall be equally applicable to both the singular and plural forms of the words and terms herein defined:

“Bond Resolution” shall mean the resolution of the Authority, adopted on May 3, 2016, as supplemented on \_\_\_\_\_, 2016, authorizing the issuance of the Series 2016 Bonds, including any resolutions supplemental thereto.

“Code” shall mean the Internal Revenue Code of 1986, as amended.

“Contract Payments” shall mean the payments due pursuant to Section 4.2 of this Contract.

“State” shall mean the State of Georgia.

“Term” shall have the meaning as specified in Section 5.1 hereof.

#### Section 1.2. Rules of Construction.

The definitions referred to in Section 1.1 shall be equally applicable to both the singular and the plural forms of the terms therein defined and shall cover all genders. “Herein,” “hereby,” “hereunder,” “hereof,” “hereinbefore,” “hereinafter,” “this Contract” and other equivalent words refer to this Contract and not solely to the particular portion thereof in which any such word is used. All references herein to particular Articles or Sections are references to Articles or Sections of this Contract unless otherwise specified.

[END OF ARTICLE 1]

## ARTICLE 2.

### REPRESENTATIONS, WARRANTIES AND AGREEMENTS

#### Section 2.1. Representations, Warranties and Agreements of the Authority.

The Authority makes the following representations, warranties and agreements as the basis for the undertakings on its part herein contained:

(a) The Authority is a public body corporate and politic duly created, organized and existing under the Constitution and laws of the State, including the Amendment, and, unless otherwise required by law, shall maintain its corporate existence so long as the Series 2016 Bonds are outstanding. Under the provisions of the Amendment, the Authority, with County approval, is authorized to (i) adopt the Bond Resolution and perform its obligations thereunder, (ii) issue, execute, deliver and perform its obligations under the Series 2016 Bonds, and (iii) execute, deliver and perform its obligations under this Contract. The Bond Resolution has been duly adopted and has not been modified or repealed. The Authority has duly authorized (i) the issuance, execution, delivery and performance of the Series 2016 Bonds and (ii) the execution, delivery and performance of this Contract. The Bond Resolution, the Series 2016 Bonds and this Contract are valid, binding and enforceable obligations of the Authority.

(b) The Authority has determined that the refunding of the Refunded Series 2010 Bonds and refunding and prepayment of the GEFA Loans are in furtherance of the Authority's purpose and mission under the Amendment.

(c) No approval or other action by any governmental authority or agency or other person is required in connection with the (i) adoption of the Bond Resolution, (ii) issuance of the Series 2016 Bonds, (iii) refunding of the Refunded Series 2010 Bonds and refunding and prepayment of the GEFA Loans, or (iv) execution, delivery and performance of this Contract by the Authority, except as shall have been obtained as of the date hereof; provided, however, no representation is given with respect to any "blue sky" laws.

(d) The adoption of the Bond Resolution, the issuance of the Series 2016 Bonds and the authorization, execution, delivery and performance by the Authority of this Contract do not violate the Amendment, the Authority's bylaws, any resolutions or ordinances of the City or the laws or Constitution of the State and do not constitute a breach of or a default under any existing court order, administrative regulation, or other legal decree, or any agreement, indenture, mortgage, lease, note or other instrument to which it is a party or by which it is bound.

(e) There is no action, suit, proceeding, inquiry or investigation, at law or in equity, before or by any court, public board or body, pending or, to the knowledge of the Authority, threatened against or affecting the Authority (or, to the knowledge of the Authority, any meritorious basis therefor) (i) attempting to limit, enjoin or otherwise restrict or prevent the Authority from issuing the Series 2016 Bonds, pledging the

Contract Payments and this Contract to the payment of the Series 2016 Bonds or refunding Refunded Series 2010 Bonds and refunding and prepaying the GEFA Loans, (ii) contesting or questioning the existence of the Authority or the titles of the present officers of the Authority to their offices or (iii) wherein an unfavorable decision, ruling or finding would (A) adversely affect the enforceability of the Series 2016 Bonds, the Bond Resolution or this Contract or (B) materially adversely affect the transactions contemplated by this Contract or the exemption of the interest on the Series 2016 Bonds from federal or State income tax.

(f) The Authority is not in violation of the Amendment, its bylaws, any resolutions or ordinances of the City or the laws or Constitution of the State and is not in default under any existing court order, administrative regulation, or other legal decree, or any agreement, indenture, mortgage, lease, note or other instrument to which it is a party or by which it is bound.

(g) Except as herein and in the Bond Resolution provided, the Authority will not encumber any part of its interest in the Contract Payments or its rights under this Contract. The pledge made of the Contract Payments constitutes a first and prior pledge of and lien on said Contract Payments and said pledge shall at no time be impaired by the Authority and the Contract Payments shall not otherwise be pledged.

(h) The Authority makes no representation as to the financial position or business condition of the City and does not warrant as to any of the statements, materials (financial or otherwise), representations or certifications with respect to the City in connection with the sales of the Series 2016 Bonds, or as to the correctness, completeness or accuracy of such statements.

#### Section 2.2. Representations, Warranties and Agreements of the City.

The City makes the following representations, warranties and agreements as the basis for the undertaking on its part herein contained:

(a) The City is a municipal corporation duly created and organized under the Constitution and laws of the State. Under the Constitution and laws of the State, the City is authorized to execute, deliver and perform its obligations under this Contract. The City has duly authorized the execution, delivery and performance of this Contract. This Contract is a valid, binding and enforceable obligation of the City.

(b) The City has determined that the refunding of the Refunded Series 2010 Bonds and refunding and prepayment of the GEFA Loans are in the public interest.

(c) No approval or other action by any governmental authority or agency or other person is required in connection with the (i) refunding of the Refunded Series 2010 Bonds and the refunding and prepayment of the GEFA Loans or (ii) execution, delivery and performance of this Contract by the City, except as shall have been obtained as of the date hereof.

(d) The authorization, execution, delivery and performance by the City of this Contract do not violate the laws or Constitution of the State and do not constitute a breach of or a default under any existing resolution or ordinance, court order, administrative regulation, or other legal decree, or any agreement, indenture, mortgage, lease, note or other instrument to which it is a party or by which it is bound.

(e) There is no action, suit, proceeding, inquiry or investigation, at law or in equity, before or by any court, public board or body, pending or, to the knowledge of the City, threatened against or affecting the City (or, to the knowledge of the City, any meritorious basis therefor) (i) attempting to limit, enjoin or otherwise restrict or prevent the City from (A) collecting ad valorem taxes and using it to make the Contract Payments or (B) refunding the Refunded Series 2010 Bonds and refunding and prepaying the GEFA Loans, (ii) contesting or questioning the existence of the City or the titles of the present officers of the City to their offices or (iii) wherein an unfavorable decision, ruling or finding would (A) adversely affect the enforceability of this Contract or (B) materially adversely affect (1) the financial condition or results of operations of the City or (2) the transactions contemplated by this Contract.

(f) The City is not in violation of the laws or the Constitution of the State and is not in default under any existing resolution or ordinance, court order, administrative regulation, or other legal decree, or any agreement, indenture, mortgage, lease, note or other instrument to which it is a party or by which it is bound.

[END OF ARTICLE 2]

**ARTICLE 3.****ISSUANCE OF SERIES 2016 BONDS; APPLICATION OF SERIES 2016 BONDS PROCEEDS**Section 3.1. Agreement to Issue the Series 2016 Bonds.

In order to provide funds, as provided in the Bond Resolution, to refund the Refunded Series 2010 Bonds and refund and prepay the GEFA Loans and pay the costs incident thereto, the Authority, in accordance with the Amendment, will issue the Series 2016 Bonds, and all of the covenants, agreements and provisions hereof shall, to the extent provided herein and in the Bond Resolution, be for the benefit and security of the Bondholders. The Authority has delivered a certified copy of the Bond Resolution to the City.

Section 3.2. Obligations Relating to the Series 2016 Bonds.

The City agrees to perform all such obligations as are contemplated by the Bond Resolution to be performed by the City.

Section 3.3. Application of Bond Proceeds.

At and upon the delivery of and payment for the Series 2016 Bonds, the proceeds received therefrom shall be applied in the manner set forth in the Bond Resolution.

[END OF ARTICLE 3]

## ARTICLE 4.

### EFFECTIVE DATE OF THIS CONTRACT; DURATION OF TERM; CONTRACT PAYMENT PROVISIONS;

#### Section 4.1. Effective Date of this Contract; Duration of Term.

This Contract shall become effective as of \_\_\_\_\_ 1, 2016 and the interests created by this Contract shall then begin, and, subject to the other provisions of this Contract, shall expire on the later of (a) February 1, 2031, or if at said time and on said date the Bonds have not been paid in full as to principal and interest then on such date as such payment shall have been made or (b) the date the Bonds have been paid in full, but in no event in excess of fifty (50) years from the date hereof. Notwithstanding the foregoing, the provisions of Section 7.1 hereof shall expire fifty (50) years from the date hereof.

#### Section 4.2. Contract Payments.

As consideration for the Authority issuing the Series 2016 Bonds and providing certain water and sewerage facilities to the City, on or prior to each February 1 and August 1 of each year (each a "Contract Payment Date"), commencing August 1, 2016, the City shall make the Contract Payments to the Authority as set forth on Schedule 1 attached hereto. Upon the issuance of Additional Bonds, this Contract shall be amended to provide an updated schedule of Contract Payments for the coming Fiscal Year, which schedule shall take into account the additional principal and interest requirements of such Additional Bonds and shall be and become for all purposes thereafter Schedule 1. In addition to the foregoing, each Contract Payment shall include the charges as billed specified in subparagraphs (e) and (f) of Section 5.03 of the Bond Resolution. Notwithstanding anything in the Bond Resolution or herein to the contrary, if such date is on or prior to February 1, the City shall pay an amount sufficient to enable the Authority to pay in full the principal and interest on the Series 2016 Bonds coming due on February 1, and if such date is on or prior to August 1, the City shall pay an amount sufficient to enable the Authority to pay in full the interest on the Series 2016 Bonds coming due on August 1, and such Contract Payments shall continue and recontinue until provision has been made for the payment in full of the Series 2016 Bonds as to principal and interest. In addition to the foregoing, the Contract Payments provided for herein shall be made by payment directly to the Sinking Fund Custodian for deposit into the Sinking Fund (except the amounts billed which are specified in subparagraphs (e) and (f) of Section 5.03 of the Bond Resolution).

#### Section 4.3. Optional Redemption and Optional Prepayment of Contract Payments.

(a) The Series 2016 Bonds shall be subject to optional redemption, in whole or in part, as provided in the Bond Resolution, and the Contract Payments due under Section 4.2, with respect to the Series 2016 Bonds, shall be subject to prepayment, both at the option of the City.

(b) No prepayment of any Contract Payment in accordance with the

provisions of the preceding sentence shall relieve the City to any extent from its obligations thereafter to make Contract Payments required by the provisions hereof until the Series 2016 Bonds and interest thereon have been paid in full. Upon the prepayment of the Contract Payments in whole, the amount of such prepayment shall be used to retire the Series 2016 Bonds, in the manner provided in, and subject to, the Bond Resolution.

Section 4.4. Budget and Tax Levy to Pay Contract Payments.

(a) The obligations of the City to make the Contract Payments when due under Section 4.2 hereof, and to perform its other obligations hereunder, are absolute and unconditional general obligations of the City as herein provided, and the City hereby pledges its full faith and credit and taxing power to such payment and performance. In the event the amount of funds lawfully available to the City is not sufficient to pay the Contract Payments when due in any year, the City shall levy an ad valorem tax on all taxable property located within the limits of the City subject to taxation for such purposes, as now existent and as same may hereafter be extended, at such rate or rates as may be necessary to produce in each calendar year revenues which shall be sufficient to fulfill the City's obligations hereunder, from which revenues there shall be appropriated sums sufficient to pay in full when due the obligations herein contracted to be paid by the City including specifically the obligation to make the Contract Payments as provided herein. The City hereby creates a lien on any and all revenues realized by it pursuant to the provisions of this subparagraph to enable it to make the Contract Payments required pursuant to Section 4.2 hereof and such lien is superior to any that can hereafter be made; provided, however, the City may create a lien on a parity with the lien created herein in connection with the issuance of Additional Bonds.

(b) The City further covenants and agrees that in order to make funds available for such purpose, it will, in its general revenue, appropriation and budgetary measures whereby its tax funds or revenues and the allocation thereof are controlled or provided for, include sums sufficient to satisfy any such Contract Payments that may be required to be made, whether or not any other sums are included in such measure, until all payments so required to be made shall have been made in full. The obligation of the City to make the Contract Payments shall constitute a general obligation of the City and a pledge of the full faith and credit of the City to provide the funds required to fulfill such obligation; provided, however, nothing herein contained shall be construed as limiting the right of the City to pay the obligations hereunder assumed out of its general funds or from other sources lawfully available to it for such purpose.

(c) In the event for any reason any such provision or appropriation is not made as provided in the preceding subsection (b), then the fiscal officers of the City are hereby authorized and directed to set up as an appropriation on their accounts in the appropriate fiscal year the amounts required to pay the obligations which may be due from the general funds of the City. The amount of such appropriation shall be due and payable and shall be expended for the purpose of paying any such obligations, and such appropriation shall have the same legal status as if the City had included the amount of the appropriation in its general revenue, appropriation and budgetary measures, and the fiscal officers of the City shall make such Contract Payments to the Sinking Fund Custodian for deposit to the Sinking Fund if for any reason the payment of such obligations shall not otherwise have been made.

Section 4.5. Obligations of County Hereunder Absolute and Unconditional.

The obligations of the City to make the payments required in Section 4.2 hereof and to perform and observe any and all of the other covenants and agreements on its part contained herein shall be absolute and unconditional irrespective of any defense or any rights of set off, recoupment, or counterclaim it may otherwise have against the Authority. Until such time as all amounts owing hereunder have been paid or provision for the payment thereof shall have been made in accordance with the Bond Resolution and hereof, the City (a) will not suspend, abate, reduce, abrogate, diminish, postpone, modify or discontinue the Contract Payments provided for herein, (b) will perform and observe all of its other agreements contained in this Contract, and (c) will not terminate the Term of this Contract or its obligations hereunder for any contingency, act of God, event, or cause whatsoever, including, without limiting the generality of the foregoing, failure of title in and to the 2010 Project, the GEFA Projects or any part thereof, any acts or circumstances that may constitute failure of consideration, eviction or constructive eviction, destruction of or damage to the 2010 Project or the GEFA Projects, the taking by eminent domain of title to or the use of all or any part of the 2010 Project or the GEFA Projects, commercial frustration of purpose, any change in the tax or other laws of the United States of America or of the State or any political subdivision of either, any declaration or finding that the Series 2016 Bonds are unenforceable or invalid, the invalidity of any provision of this Contract, or any failure of the Authority to perform and observe any agreement, whether express or implied, or any duty, liability or obligation arising out of or connected with this Contract, or the Bond Resolution. Nothing contained in this Section shall be construed to release the Authority from the performance of any of the agreements on its part contained herein or in the Bond Resolution; and if the Authority should fail to perform any such agreement, the City may institute such action against the Authority as the City may deem necessary to compel performance or recover its damages for nonperformance as long as such action shall not do violence to or adversely affect the agreements on the part of the City contained in this Contract and to make the Contract Payments specified herein. The City may, however, at its own cost and expense and in its own name, prosecute or defend any action or proceeding or take any other action involving third persons which the City deems reasonably necessary in order to secure or protect its rights hereunder, and in such event the Authority hereby agrees to cooperate to the extent required.

Section 4.6. Enforcement of Obligations.

The obligation of the City to make Contract Payments under this Article may be enforced by (a) the Authority, (b) the Bondholders, in accordance with the applicable provisions of the Bond Resolution and independently of the Authority or (c) such receiver or receivers as may be appointed pursuant to the Bond Resolution or applicable law. The covenants and agreements hereunder, including specifically the obligation to make the Contract Payments, shall be enforceable by specific performance; it being acknowledged and agreed by the Authority and the City that no other remedy at law is adequate to protect the interests of the parties hereto or the Bondholders.

[END OF ARTICLE 4]



**ARTICLE 5.**

**SPECIAL COVENANTS AND AGREEMENTS**

Section 5.1. No Warranty of Condition or Suitability by the Authority.

THE AUTHORITY MAKES NO REPRESENTATION OR WARRANTY WITH RESPECT TO THE CONDITION OR WORKMANSHIP OF ANY PART OF THE 2010 PROJECT, GEFA PROJECTS OR THEIR SUITABILITY.

Section 5.2. Further Assurances and Corrective Instruments, Recordings and Filings.

The Authority and the City agree that they will, from time to time, execute, acknowledge and deliver, or cause to be executed, acknowledged and delivered, such supplements hereto and such further instruments as may reasonably be required to facilitate the performance of this Contract.

Section 5.3. Bonds Made Subject to this Contract; Other Obligations.

No Additional Bonds shall be subject to this Contract unless and until the City and the Authority shall execute an amendment or supplement to this Contract specifically incorporating such Additional Bonds.

The Authority shall not issue any other obligations of any kind payable from or enjoying a lien on the monies authorized to be appropriated and paid by the City under this Contract prior to or superior to the lien for the payment of the principal of and interest on the Bonds. Nothing contained herein shall otherwise restrict the issuance by the Authority of (i) other obligations secured by an intergovernmental agreement substantially similar to this Contract, or (ii) obligations not secured by this Contract and which will be secured by a lien on the net revenues of the City’s water and sewerage system or any portion thereof, the proceeds of which may be applied to the payment of the costs of other extensions or improvements to the City’s water and sewerage system or the payment of any other project or purpose which the Authority is authorized under law to undertake.

Section 5.4. Continuing Disclosure Certificate.

The City hereby covenants for the benefit of the owners of the Series 2016 Bonds and the Underwriter of the Series 2016 Bonds to comply with its obligations under a Continuing Disclosure Certificate, to be entered into in connection with the issuance of the Series 2016 Bonds, to assist the Underwriter in complying with its obligations under Rule 15c2-12 of the Securities Exchange Act of 1934, as amended. A breach of this covenant shall not be deemed to be an event of default hereunder, and the sole remedy under this Contract shall be an action to compel performance.

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### Section 5.5. Use of Proceeds and Specific Tax Covenants.

The Series 2016 Bonds are being issued by the Authority in compliance with the conditions necessary for interest income on the Series 2016 Bonds to be excluded from gross income for federal income tax purposes pursuant to the provisions of Section 103(a) of the Code relating to obligations of the State or political subdivisions thereof. It is the intention of the Authority and the City that the interest on the Series 2016 Bonds be and remain excludable from gross income for federal income tax purposes, and, to that end, the Authority and the City hereby covenant with the Bondholders as follows:

(a) That they will not take any action, or fail to take any action, if any such action or failure to take action would adversely affect the tax exempt status of interest on the Series 2016 Bonds under Section 103 of the Code.

(b) That they will not directly or indirectly use or permit the use of any of the proceeds of the Series 2016 Bonds or take or omit to take any action in a way that would cause the Series 2016 Bonds to be (i) “private activity bonds” within the meaning of Section 141 of the Code or (ii) obligations which are “federally guaranteed” within the meaning of Section 149(b) of the Code.

(c) That they will not directly or indirectly use or permit the use of any proceeds of the Series 2016 Bonds or any other funds of the Authority or the City or take or omit to take any action that would cause the Series 2016 Bonds to be “arbitrage bonds” within the meaning of Section 148 of the Code. To that end, the Authority and the City will comply with all requirements of Section 148 of the Code and any regulations promulgated thereunder to the extent applicable to the Authority or the City. In the event that at any time the Authority or the City is of the opinion that for purposes of this Section it is necessary to restrict or limit the yield on the investment of any moneys held under the Bond Resolution, the Authority and the City shall take such action as may be necessary to effect the same.

### Section 5.6. Arbitrage Covenants.

Neither the Authority nor the City shall, subsequent to the date of the issuance and delivery of the Series 2016 Bonds, intentionally use any portions of the proceeds of the Series 2016 Bonds to acquire higher yielding investments, or to replace funds which were used directly or indirectly to acquire higher yielding investments, except as may otherwise be permitted by the Code, including, but not limited to, complying with the requirements of Section 148(f) of the Code and the payment of rebate, if any, required to be made by the Authority, and that they will expend the proceeds of the Series 2016 Bonds in compliance with the applicable provisions of Section 141 to 149, inclusive, of the Code.

### Section 5.7. Authority and City Representatives.

Whenever under the provisions of this Contract the approval of the Authority or the City is required or the Authority or the City is required to take some action at the request of the other, such approval or such request shall be given for the Authority by its Chairman or its Vice Chairman and for the City by its Mayor.

Section 5.8. Provision of Water and Sewer Facilities and Services.

As consideration for the payment of the Contract Payments by the City, the Authority shall continue to provide certain water and sewer facilities (consisting of the 2010 Project and the GEFA Projects) and services to the City as provided in the 2010 Contract.

[END OF ARTICLE 5]

## ARTICLE 6.

### EVENTS OF DEFAULT AND REMEDIES

#### Section 6.1. Events of Default Defined.

The following shall be “events of default” under this Contract and the term “event of default” shall mean, whenever used in this Contract, any one or more of the following events:

(a) Failure by the City to pay when due any amount required to be paid under Section 4.2 hereof;

(b) The City shall fail to perform any of the other agreements, conditions, covenants or terms herein required to be performed by the City and such default shall continue for a period of 30 days after written notice has been given to the City by the Authority, the Paying Agent or the Bondholders specifying such default and requesting that it be remedied, or within a greater number of days if such remedy has been undertaken and is being diligently pursued and more than 30 days is required for its completion; provided, however, that if, by reason of force majeure, the City is unable, in whole or in part, to perform the obligations on its part herein undertaken (other than the obligations relating to the payments to be made under Section 4.2 hereof), the City shall not be deemed in default during the continuance of such inability to perform. The term force majeure shall mean, without limitation, acts of God; strikes; work stoppages or similar disturbances; acts of public enemies; orders of any kind of the government of the United States of America or of the State or any of their departments, agencies or officials, or any civil or military authority; insurrections; riots; epidemics; landslides; lightning; earthquakes, fire; hurricanes; storms; floods; washouts; droughts; arrests; restraint of government and people; civil disturbances; explosions; breakage or accident to machinery or equipment; partial or entire failure of utilities, or any other cause or event not reasonably within the control of the City. The City will use its best efforts, however, to remedy, with all reasonable dispatch, the cause or causes preventing the City from carrying out such obligation; provided, that the settlement of strikes, work stoppages and similar disturbances shall be entirely within the discretion of the City and the City shall not be required to make settlement of such disturbances by acceding to the demands of the opposing party or parties when such course is, in the judgment of the City, unfavorable to the City; or

(c) An “event of default” shall have occurred under the Bond Resolution.

Notwithstanding the foregoing, a breach of the covenant contained in Section 5.4 hereof shall not be deemed an event of default hereunder, and the sole remedy shall be an action to compel performance.

### Section 6.2. Remedies on Default.

Whenever any event of default referred to in Section 6.1 hereof shall have happened and be subsisting, the nondefaulting party, or the Bondholders as provided in the Bond Resolution, may take any one or more of the following remedial steps:

- (a) The Authority or the Bondholders may require any depository under the Bond Resolution to turn over to the Sinking Fund Custodian any moneys held in any of the funds created pursuant to the Bond Resolution;
- (b) The Authority or the Bondholders may take whatever action at law or in equity may appear necessary or desirable to collect the Contract Payments then due and thereafter to become due, or to enforce performance and observance of any obligation, agreement or covenant of the City under this Contract; and
- (c) The Bondholders may exercise any remedies provided for in the Bond Resolution.

Any amounts collected pursuant to action taken under this Section 6.2 shall be applied in accordance with the Bond Resolution to the extent the provisions of the Bond Resolution relate to such amounts.

### Section 6.3. No Remedy Exclusive.

No remedy herein conferred upon or reserved to the Authority or the Bondholders is intended to be exclusive of any other available remedy or remedies, but each and every such remedy shall be cumulative and shall be in addition to every other remedy given under this Contract or now or hereafter existing at law or in equity or by statute. No delay or omission to exercise any right or power accruing upon the occurrence of any event of default shall impair any such right or power or shall be construed to be a waiver thereof, but any such right and power may be exercised from time to time and as often as may be deemed expedient. In order to entitle the Authority or the Bondholders to exercise any remedy reserved to it in this Article, it shall not be necessary to give any notice, other than such notice or notices as may be herein expressly required. Such rights and remedies as are given to the Authority hereunder shall also extend to the Bondholders, and the Bondholders shall be deemed third party beneficiaries of all covenants and agreements herein contained.

### Section 6.4. No Waiver of Breach.

In the event any agreement contained herein should be breached by either party and thereafter waived by the other party, such waiver shall be limited to the particular breach so waived and shall not be deemed to waive any other breach hereunder.

### Section 6.5. County Authorized to Cure Default of Authority.

With regard to any default on the part of the Authority under this Contract or under the Bond Resolution, the Authority hereby vests the City, with full power, for the account

of the Authority, to perform any obligation in remedy of such default in the name and stead of the Authority with full power to do any and all things and acts to the same extent that the Authority could do and perform any such acts.

Section 6.6. Failure to Enforce Agreement Not a Waiver.

The failure of the Authority or the Bondholders to enforce any agreement, condition, covenant or term by reason of any default or breach by the City shall not be deemed to void or affect the right to enforce the same agreement, condition, covenant or term on the occasion of any subsequent default or breach.

[END OF ARTICLE 6]

## ARTICLE 7.

### INDEMNITY

#### Section 7.1. Authority Indemnified; Immunity of Members of Authority.

(a) During the term of this Contract, the City, at its own expense, shall handle to conclusion all claims and pay all judgments obtained against the Authority by reason of any failure, breach, or default on the part of the City in the performance of or compliance with any of the obligations of the City under the terms of this Contract, provided, however, that the indemnity provided by this Section shall be effective only to the extent that the amount of liability arising from any such loss shall exceed the proceeds available therefor obtained for insurance carried with respect to such loss.

(b) Notwithstanding the fact that it is the intention of the parties that the Authority shall not incur any pecuniary liability by reason of the terms of this Contract or the undertakings required of the Authority hereunder by reason of the issuance of the Bonds, the adoption of the Bond Resolution, or the performance of any act requested of the Authority by the City, nevertheless, if the Authority should incur any such pecuniary liability, then at that event, the City shall indemnify and hold the Authority harmless against all claims, demands, or causes of action arising therefrom and all costs and expenses incurred in connection with any such claim or in connection with any action or proceeding brought thereon, and, upon notice from the Authority, the City shall defend the Authority in any such action or proceeding.

(c) No recourse shall be had for the enforcement of any obligation, covenant, or agreement of the Authority contained in this Contract or in the Bonds or the Bond Resolution for any claim based hereon or thereon against any member, officer, or employee, of the Authority or of any successor thereto, in his individual capacity, either directly or through the Authority whether by virtue of any constitutional provision, statute, or rule of law. This Contract, the Bonds, and the Bond Resolution are solely corporate obligations, and no personal liability shall attach to, or be incurred by, any member, officer, or employee of the Authority or of any successor thereto, either directly or by reason of the obligations, covenants, or agreements entered into between the Authority and the City, and all personal liability of any character against every such member, officer, and employee is, by the execution of this Contract, expressly waived and released. The immunity of members, officers, and employees of the Authority under the provisions contained in this Section shall survive the termination of this Contract.

[END OF ARTICLE 7]

**ARTICLE 8.**

**MISCELLANEOUS**

Section 8.1. Agreement to Pay Attorneys' Fees and Expenses.

If a party should default under any of the provisions of this Contract and either or both the nondefaulting party or the Bondholders should employ attorneys or incur other expenses for the enforcement of performance or observance of any obligation or agreement on the part of the City or the Authority herein contained, the defaulting party agrees that it shall on demand therefor pay to the nondefaulting party and the Bondholders the reasonable fee of such attorneys and such other reasonable expenses so incurred by the nondefaulting party and the Bondholders.

Section 8.2. Notices.

All notices, certificates or other communications hereunder shall be sufficiently given and shall be deemed given when mailed by registered or certified mail, return receipt requested, postage prepaid and addressed as follows:

If to the Authority: Paulding County Industrial Building Authority  
730 Airport Parkway  
Dallas, Georgia 30157  
Attention: Chairman

With a copy to: Talley, Richardson & Cable, P.A.  
367 W. Memorial Drive  
Dallas, Georgia 30132  
Attention: W. Thomas Cable, Esq.

If to the City: City of Dallas, Georgia  
129 East Memorial Drive  
Dallas, Georgia 30132  
Attention: Mayor

With a copy to: Glen E. Stinson, Esq.  
35 Courthouse Square  
Dallas, Georgia 30132

Any party, by notice given hereunder, may designate different addresses to which subsequent notices, certificates or other communications will be sent.

Section 8.3. Binding Effect; Third-Party Beneficiaries.

This Contract shall inure to the benefit of and shall be binding upon the Authority, the City and their respective successors and assigns, subject, however, to the limitations contained in this Contract. The City hereby acknowledges and agrees that the Authority has



pledged its rights, title and interests (but not its obligations) under the Contract as security for the payment of the principal of and interest on the Bonds. The City hereby consents to such pledge and the Authority and the City agree that the Bondholders are third-party beneficiaries of this Contract, and may enforce the terms and provisions hereof. There are no other third-party beneficiaries.

Section 8.4. Severability.

If any provision of this Contract shall be held invalid or unenforceable by any court of competent jurisdiction, such holding shall not invalidate or render unenforceable any other provision hereof.

Section 8.5. Amounts Remaining in Sinking Fund.

It is agreed by the parties hereto that, subject to and in accordance with the terms and conditions of the Bond Resolution certain surplus moneys remaining in the Sinking Fund after payment of the Bonds shall belong to and be paid to the City.

Section 8.6. Amendments, Changes and Modifications.

The Contract may be amended, changed and modified (a) to cure any ambiguity or formal defect or omission in this Contract; (b) to provide for the issuance of Additional Bonds in accordance with the terms of this Contract (including, without limitation, the addition of events of default and remedies relating to any Additional Bonds hereafter incurred by the City); (c) to grant any additional rights, remedies, powers, authority or security that may lawfully be granted to or conferred upon the Bondholders by the City; (d) to further expand or clarify the amounts required to be paid into the Sinking Fund and the timing thereof; (e) to conform to supplements to the Bond Resolution; (f) to make any other amendments, changes and modifications that in the opinion of counsel are not materially adverse to the interests of the Bondholders. Any other amendments, changes and modification in this Contract will become effective only with the consent of the owners of fifty-one (51%) in aggregate principal amount of the Bonds secured hereby. In no event, however, may any such amendments, changes and modifications permit (a) the reduction of Contract Payments required to be made to ensure the payment of the Bonds and the other obligations secured by the Bond Resolution; or (b) the reduction of the percentage of the principal amount of the Bonds required to consent to any such amendment, change or modification.

Section 8.7. Execution Counterparts.

This Contract may be simultaneously executed in several counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

Section 8.8. Captions.

The captions and headings in this Contract are for convenience only and in no way define, limit or describe the scope or intent of any provisions of this Contract.

Section 8.9. Law Governing Contract.

This Contract shall be governed by, and construed in accordance with, the laws of the State of Georgia.

Section 8.10. No Replacement or Supersession.

Nothing in this Contract is intended to replace, supersede or otherwise contradict or override any other agreement between the City and the Authority presently in effect.

Section 8.11. No Assignment by City.

This Contract may not be sold, assigned, delegated or encumbered by the City.

[END OF ARTICLE 8]

IN WITNESS WHEREOF, the Authority and the City have caused this Contract to be executed in their respective corporate names and their respective corporate seals to be hereunto affixed and attested by their duly authorized officers, all as of the date first above written.

PAULDING COUNTY INDUSTRIAL  
BUILDING AUTHORITY

(SEAL)

By: \_\_\_\_\_  
Chairman

Attest:

\_\_\_\_\_  
Secretary

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CITY OF DALLAS, GEORGIA

(SEAL)

By: \_\_\_\_\_  
Mayor

Attest:

\_\_\_\_\_  
Clerk

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SCHEDULE 1  
CONTRACT PAYMENTS  
[ATTACHED.]