



## INDIAN RIVER COUNTY, FLORIDA DEPARTMENT OF UTILITY SERVICES

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**Date:** April 2, 2018  
**To:** Jason E. Brown, County Administrator  
**From:** Vincent Burke, P.E., Director of Utility Services  
**Prepared By:** Arjuna Weragoda, P.E., Capital Projects Manager  
**Subject:** Van Antwerp Properties Draft Well Mitigation Plan and Award of Bid #2018038

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### **DESCRIPTIONS AND CONDITIONS:**

During the spring of 2012, the Indian River County Department of Utility Services (IRCDUS) conducted a full capacity test of the North County (Hobart) Reverse Osmosis (NCRO) Water Treatment Facility (WTF). During that dry time of the year, the NCRO WTF was able to effectively test its raw water pumping abilities and reverse osmosis membrane filtration efficiencies. The Van Antwerps, adjacent property owners just west of the NCRO WTF, were affected by this functional test. The Van Antwerps, who historically relied on artesian flow from their wells for their water needs, reportedly lost artesian water flow during the pumping test. As a result, IRCDUS, as required by its Consumptive Use Permit (CUP), began efforts to mitigate this interference to the Van Antwerps, an existing legal user (ELU) of the Upper Floridan Aquifer (UFA). Such mitigation efforts continue today.

On November 21, 2017, the Indian River County Board of County Commissioners (BCC) approved Work Order No. 16 with Kimley-Horn and Associates (KHA) for a lump sum amount of \$44,608.00 to provide professional engineering services that included coordination and meetings, specifications and drawings, permitting, observation, and startup of a long-term mitigation solution for the Van Antwerp (VA) properties along 81<sup>st</sup> Street, just west of the NCRO WTF and east of 66<sup>th</sup> Avenue.

IRCDUS owns and operates two regional potable water treatment facilities. The NCRO WTF is rated for 11.44 million gallons per day (MGD). Today, the NCRO WTF operates a rotation of three to four membrane skids (out of eight), fed from five raw water wells (out of nine), to meet daily potable water demands. As more people move to Indian River County, future hypothetical withdrawals may result in additional drawdowns on the UFA. The draft mitigation plan (Attachment 3) that is presented for BCC approval provides a "future proof" plan for the VA properties owned by Mr. and Mrs. Van Antwerp. The VA properties in total have five wells that were installed as far back as 1925 and as recently as 2005. The VA properties are made up of six parcels ranging from 0.86 to 9.0 acres for a total of approximately 28.93 acres. Currently, the three homestead structures and a packing house are served by County potable water. See Exhibit A (Attachment 1), which depicts the VA properties and well locations.

### **ANALYSIS:**

As part of the NCRO WTF expansion in 2011, six new UFA wells were installed in the NCRO wellfield for a total of nine source wells. The St. Johns River Water Management District (SJRWMD) Consumptive Use Permit (CUP) 10524-9 was issued to IRCDUS in 2011 and expires in 2031. As part of the CUP, two conditions related to the subject matter are presented:

Condition No. 29: *"The permittee's use of water as authorized by this permit shall not cause an interference with an existing legal use of water as defined in District rules. If interference occurs, the District may revoke the permit in whole or in part to abate the adverse impact unless otherwise mitigated by the permittee. The permittee has submitted to the District a detailed mitigation plan to address the potential for interference as the permittee's authorized withdrawals increase over the term of the permit. The permittee shall implement the plan (titled "Indian River County Consumptive Use Permit Avoidance Plan" and received by the District on July 11, 2011) in accordance with the schedule set forth in the plan. Any modification to the plan must be submitted to the District for review and must obtain District approval before it may be implemented. Existing legal users that may potentially be impacted by the withdrawals of groundwater at the Hobart Park (North) WTP were identified in the plan; however, permittee must also provide mitigation for any interference to existing legal users that have inadvertently not been identified in the plan."*

Condition No. 30: *"The permittee must mitigate if an adverse impact to existing users has occurred. Mitigation may include installation of a new pump or motor, providing new electrical wiring, connection with the existing water supply system, or other appropriate measures. However, the mitigation cannot result in an increased cost to an impacted user."*

CUP condition 30 is a very important key factor that allows the District to grant water use allocation rights to IRCDUS as long as the ELU's water use is preserved. In the event that an ELU has been affected, as when the IRCDUS conducted its full capacity functional test in 2012, then specific and required mitigation actions, as detailed in the mitigation plan attached to the CUP, must be implemented.

#### **Detailed History:**

During a scheduled full-capacity test at the NCRO on April 9, 2012, Mr. Fred Van Antwerp contacted the District regarding loss of artesian water flow noticed on his wells. IRCDUS immediately took action by connecting the residences and the packing house to the County's potable water system by June of 2012. The VA structures are still connected to, and using, IRCDUS potable water today. After the VA residences/packing house were connected to County water, the County began investigating additional mitigation measures, including formalizing an agreement between the County and the Van Antwerps. After several months of negotiations and failure to reach a compromise, the discussions never advanced.

IRCDUS still pursued mitigation efforts for two of the irrigation wells. Temporary interruption of irrigation water was resolved by re-plumbing an existing suction pump. The suction intake was piped into the well to a depth of 40 feet and included a screen and check valve. The modification was demonstrated to provide a consistent flow rate of water in the 84 to 87 gallons per minute (GPM) range at one well, while maintaining ample flow to the irrigation system at the other well. The subject interference was resolved successfully per correspondence in the SJRWMD archive (Attachment 2).

On May 24, 2013, after the above mitigation efforts were successfully implemented, IRCDUS conducted a four-hour functional test in which eight NCRO WTF wells were operated at full capacity. During the test, wells 1, 3, 4, 5, 6, 7, 8, and 9 were operated to produce the optimal amount of finished water under emergency power. During the test, the VA's irrigation system could continue to be operated with centrifugal pumps. In conclusion, the VA's temporary loss of artesian water flow was mitigated through the well retrofit work and connection of three residences and their packing house to the County potable water system.

During the same time frame in July of 2013, CDM Smith Inc. conducted sampling of the UFA wells in the vicinity of NCRO. The intent of the sampling efforts was to provide a comparison of post-expansion UFA conditions with data collected prior to the expansion. As part of the testing, IRCDUS increased production at the NCRO to full capacity, pumping from seven to eight of the nine production wells for 1.5 hours, to represent full aquifer

stresses associated with operation of the facility. This testing was performed in July, September and October of 2013. During these tests, IRCDUS was not made aware of any interferences reported from the Van Antwerps.

During the period of December 20 to 23, 2015, NCRO was forced to increase production to full capacity to take on demand from the entire county while the South County Reverse Osmosis (SCRO) WTF was offline for repairs due to an emergency break. During the three days SCRO was not operating, seven of the nine production wells at NCRO ran approximately 16 hours a day, with four of the nine wells running the remaining eight hours per day. No interferences were reported from the Van Antwerps.

As part of the NCRO on-going UFA well monitoring program, on April 10, 2017, IRCDUS conducted the first quarterly UFA well sampling under the CDM Smith, Inc., work order. As part of the testing, County increased production at the NCRO to full capacity, pumping from seven to eight of the nine production wells for 1.5 hours, to represent full aquifer stresses associated with operation of the facility. During the subject testing, Mr. Van Antwerp reported loss of artesian flow at 1 of his wells (Well No. 1). He could still pump water from his wells, but the artesian pressure dropped as a result of a dry April and the functional test of the IRCDUS wells.

Mr. Van Antwerp was again concerned about his upcoming planting season (July 2017), and the Director of IRCDUS discussed options with him on how best to alleviate those concerns. A centrifugal pump at Well No. 5 (the western well on the VA property - see Attachment 1) was rented by IRCDUS and affixed to the well. Piping was installed by IRCDUS to provide flexibility to fill Mr. Van Antwerp's canals so that he could use his mobile irrigation spray device. Mr. Van Antwerp could either use flow water from artesian pressure or run the rented pump. The rented pump at Well No. 5 has been in place and paid for by IRCDUS since June 2017.



As part of the ongoing discussions with the Van Antwerps and SJRWMD, IRCDUS was asked to make the Van Antwerps "whole". Since historical water quantity and quality records did not exist for the VA wells, IRCDUS was in a difficult position of trying to effectively find a solution while not knowing what the end target was. Additional expertise was needed to help provide current data that would identify existing conditions at the VA properties and to help craft a more long-term solution for IRCDUS and the Van Antwerps.

In May 2017, the BCC authorized Kimley Horn and Associates (KHA), in conjunction with hydrogeologist firm JLA Geosciences (JLA), to collect data in order to assess what was happening at the VA's wellfield while the County was drawing water from the UFA. With Mr. and Mrs. Van Antwerp's permission, calibrated testing equipment was strategically located at four of the Van Antwerp wells. Recording devices were able to precisely track the drawdown effects on the VA wells when IRCDUS wells were operating. Specific tests were performed, such as pumping a set of eastern IRCDUS wells at one time, then switching to a group of western wells. Additionally, a test was run that involved pumping a majority of wells in an effort to gauge the varying degree of drawdown experienced at the VA wells. A final test was conducted in which none of the NCRO wells were operated. As a result of the test, artesian pressure was restored, but only briefly to the VA wells, as it was discovered that other, non-county users of the UFA were causing adverse drawdowns on the VA wells. In short, the report documented how the IRCDUS affected the VA wells under certain pumping conditions, but it also identified the fact that other unidentified users of the UFA are also impacting the VA wells. The JLA report was furnished to the District.

The Van Antwerps, recalling that a formal agreement never came to fruition in 2012, and with 2017 testing issues reigniting concerns, requested a more formal mitigation plan be put in place. Staff began to explore options of potential solutions based on the data obtained from the hydrogeologist.

## Options:

1. Raw water side stream: Install a polyvinyl chloride (PVC) raw watermain approximately 2,007 linear feet (LF) to extend from the existing IRC Well No. 7. Estimated project cost of \$264,060.00.
  - Pros: IRCDUS and Van Antwerps share same water from NCRO well field.
  - Cons: Time to permit. Operational concerns of IRCDUS staff for the feed water to the NCRO WTF.
2. Potable water: Run a side stream from the existing 3" PVC on 81st Street. Estimated cost of \$3,400.00.
  - Pros: Quick, easy to perform.
  - Cons: Goes directly against SJRWMD and IRCDUS water conservation efforts. Amounts could be great.
3. Extend Reuse Main: Install approximately 3,360-LF reuse main to extend from 58<sup>th</sup> Avenue. The estimated project cost was \$365,970.00.
  - Pros: Reuse line on edge of 58<sup>th</sup> Ave. Not tied to UFA.
  - Cons: Perception. Long run to VA properties. Not pressurized. Signage required.
4. Buy the Property: As part of the 66<sup>th</sup> Avenue road widening project, a portion of the VA parcel closest to 66<sup>th</sup> Avenue is being impacted, approximately 0.99-Acres. Public Works requested an appraisal, and the appraisal indicated a value of \$22,300 for the 0.99-Acres. The \$22,300 per acre multiplied by approximately 28.93 acres (\$645,139) was a preliminary number utilized in the subject option. This number was conveyed to Mr. Van Antwerp via SJRWMD. According to other sources, the owner stated that the value quoted per acre, based on appraised value, was too low, and no counter was offered. No further evaluation of the subject option was conducted due to lack of interest from the owner, and the lack of need for the remainder of the approximately 27 acres for public purposes such as road widening or storm water retainage.

None of the options above were considered acceptable for various reasons outlined above. A fifth option, employing wells fitted with submersible pumps, was decided by all as the best way to provide the VA properties with water now and into the future. The attached draft mitigation plan, which is a culmination of many months of negotiations between SJRWMD, the Van Antwerps and County staff, provides that assurance and is one that staff recommends.

The draft mitigation plan (Attachment 3) has been agreed to by SJRWMD and the Van Antwerps. See attached email dated April 26, 2018 (Attachment 6), indicating the acceptance of this plan.

## Key highlights of the draft mitigation plan.

- Furnish a new Well No. 6 for agricultural use, which will be a fully permitted 6" UFA well equipped with a 2 horsepower (hp) Grundfos submersible pump, new concrete well pad, electrical service and control panel.
- Retrofit existing Well No. 1 for agricultural use, with a 2 hp Grundfos submersible pump after video logging. A new well head will be provided
- Provide annual maintenance inspections on Well No. 6 and Well No. 1 and replace pumps/motors, if needed.
- Continue to provide County potable water at no charge to the three house structures and one packing house with reasonable amounts. Any usage over those amounts will be billed monthly at current consumption rates.
- This draft agreement is valid for agricultural use of the water and will become null and void at such time as all the properties change use from agricultural purposes.

It should be noted that SJRWMD staff have been very professional and great to work with during this process as well as the Van Antwerps, who have been very helpful to staff and patient while the plan was developed.

### **IRC Ordinance-Waiver:**

As part of the work performed in 2012 and throughout this process, the VA properties have been provided with County potable water at no charge. Indian River County Code, Section 201.20 states that *"No water or sewer service shall be furnished or rendered free of charge to any person."* The VA properties, as it relates to the County obligations under its CUP, necessitate a special dispensation from the BCC that would allow this unique service to continue. The Van Antwerps should be commended for their very judicious potable water consumptive use at the three domestic structures. They value clean and safe drinking water and use only sparing amounts for their needs.

According to County code, six Equivalent Residential Units (ERUs) worth of capacity are needed at the site: 1 ERU per residential structure and 3 ERUs at the packing house. The current impact fee of \$1,300/ERU has not been paid by the VA properties, and as a requirement of the draft mitigation plan, that charge will not be collected. As the capacity is being used, the cumulative water impact fee amount of \$7,800 needs to be covered by some other funding source. The BCC may authorize the use of IRCDUS funds to cover the ERU charges. If the property is sold, the new property owner may elect to continue County potable water service but would be required to reimburse IRCDUS.

Under staff recommendation, the BCC will be asked to cover the impact fees and to allow the Van Antwerps to continue to receive County potable water at no charge, as defined in the draft Mitigation Plan.

### Costs Expended To Date:

Staff takes the CUP requirements very seriously. Since 2012, staff has compiled costs IRCDUS has incurred. Note that these costs, some of which are for illustration purposes, do not include staff time.

As part of the mitigation efforts to date, IRCDUS has incurred the following costs:

Task	Description	Cost
1	Connected the properties to County water via 3" PVC water main (June 2012)- 3" main approximately 995 LF	\$20,319.24
2	Restoration of two irrigation wells (May 2013), with 2" diameter pipe dropped inside both casings that would allow the existing pump to lift water up to 26' below the ground surface and continue pumping to the irrigation system.	\$ 5,960.00
3	Van Antwerp Water Supply Evaluation (Kimley-Horn/JLA), May 2017	\$22,174.00
4	Temporary pump rental at Well No. 5 (June 2017-March 2018)	\$12,578.42
5	Piping from Well No. 5 to Southern Ditch	\$ 8,500.00
5	Standard connection costs (6 ERUs + meters + deposits)	\$ 8,720.00*
6	Potable water consumption (2014-present, does not go back to 2012)	\$ 8,869.93*
<b>Total</b>		<b>\$87,121.59</b>

\* These costs are for illustration purposes only and have not been charged to the Van Antwerp Property but represent tangible costs associated with the mitigation efforts already in place.

Costs required for Proposed Solution:

Task	Description	Cost
1	Design and oversight of new Well No. 6, Well No. 1 retrofit*	\$44,608.00*
2	Well Construction	\$107,140.00
<b>Total</b>		<b>\$151,748.00</b>

\* Previously approved by the BCC on November 21, 2017.

Future Costs: Based on a 10-year projection

Task	Description	Cost
1	Continued pump rental at Well No. 5 until Wells No. 1 and No. 6 are in place (est. six months @ \$1,362/mo.)	\$8,172.00
2	Operation and Maintenance (\$5k/yr)	\$50,000.00
3	Potable Water Consumption (5k/house/month, 17K/packing house/month)*	\$15,925.20
<b>Total 10 years (est)</b>		<b>\$74,097.20</b>
<b>Grand Total</b>		<b>\$312,966.80</b>

\* Using 2018 rates in effect today.

### Solution/Procurement:

The contemplated submersible pump solutions were designed, and technical specifications were prepared by KHA. The project was advertised January 28, 2018, with a mandatory pre-bid meeting held at the VA properties on February 14, 2018. The engineer's estimated construction cost for the work was \$95,321.77. Although twenty potential contractors were listed as plan holders on Demandstar and ten contractors attended the mandatory pre-bid, only three prospective bidders submitted a bid. See Attachment 5 from KHA recommending award to the lowest responsive and responsible bidder.

**Bids Opened February 28, 2018**

Bidder	Location	Total Bid Amount
All Webbs Enterprises	Jupiter, Florida	\$107,140.00
Applied Drilling	Tampa, Florida	\$166,870.00
A.C. Schultes	Disqualified	

**FUNDING:**

Funding for the submersible pump solution is available in the Utilities Operating Fund. Operating funds are derived from water and sewer sales.

Description	Account Number	Amount
Van Antwerp Well Mitigation	47123536-044699-17529	\$107,140.00

Water Impact Fee Funding and connection costs of \$8,720.00 for the Van Antwerp Properties is available in the Utility Operating Fund balance. Operating funds come from the sale of water and sewer service.

**RECOMMENDATION:**

Staff recommends the Board of County Commissioners consider the following:

1. Approve or approve with changes the Draft Mitigation Plan labeled "Mitigation Plan for Well Interference at the VA\_properties, Indian River County Consumptive Use Permit Number: 10524-9 (item #1329361) dated April 23, 2018" and authorize staff to forward the Mitigation Plan to the St. Johns River Water Management District.
2. Authorize staff to continue providing potable water at no cost as stipulated in the draft mitigation plan in lieu of Indian River County Ordinance Section 201.20 - No free service.
3. Cover the water impact fees of six equivalent residential units and connection costs through the Utility Operating Fund in the amount of \$8,720.00.
4. Award Bid #2018038 to All Webbs, in the amount of \$107,140.00. Authorize the Chairman to execute the sample agreement, as presented, pending receipt of bonds and insurance requirements, and final approval by the County Attorney as to form and legal sufficiency.

**ATTACHMENT(s):**

1. Exhibit A-Property
2. Correspondence from SJRWMD files
3. Draft Mitigation Plan (4 Pages)
4. Sample Agreement (7 Pages)
5. KHA letter of recommendation for bid award (6 Pages)
6. Email Confirming the Acceptance of the Draft Plan from SJRWMD