

## Gilliam, Allen

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**From:** Gilliam, Allen  
**Sent:** Thursday, December 06, 2012 11:19 AM  
**To:** James N. Carlock (jamesncarlock@sbcglobal.net)  
**Cc:** 'Penny Bray'  
**Subject:** AR0021580\_Osceola acceptance or denial of Actagro wastewater\_20121204

James,

This office is in receipt of Actagro's request (via ECCI consulting engineers) to discharge a portion of its organic based fertilizer manufacturing wastewater to Osceola's sewage collection system. This request and information was received from you on 11/26/12.

This agency cannot dictate the City accept or decline Actagro's request. This is entirely at the City's discretion.

Comments: ECCI has compiled information including the facility's two distinct processes in manufacturing their fertilizer, one being categorical per 40 CFR 418, Subpart G (Mixed and Blend Fertilizer) and the other being covered under 40 CFR 436, Mineral Mining and Processing which has no Pretreatment limitations ("non-categorical" for the National Pretreatment Regulation purposes).

These two (2) distinctly separate processes (Federally regulated categorical and non-categorical) was substantiated by EPA Headquarters and is also included in Actagro's request.

It is the second wastestream (non-categorical) they're requesting to discharge into the City's collection system while completely recycling the first process' wastewater (categorical) back into their overall process operations.

ECCI posits the following:

- 1) BOD<sub>5</sub> loading from Actagro's wastewater characteristics in comparison to the City's organic design capacity in Section 4 of their engineering evaluation with the conclusion that Actagro's wastewater would not contribute enough BOD<sub>5</sub> to cause an organic overload at the City's wastewater treatment plant;
- 2) Actagro's nutrient loadings would not contribute to algae blooms at the City's wastewater treatment plant; and
- 3) Zinc contributions from Actagro's non-categorical wastestream would not cause inhibition of the City's wastewater treatment system. [This conclusion is based on the maximum allowable industrial loading (MAIL) spreadsheet supplied to the City by ADEQ Pretreatment staff. This spreadsheet follows EPA's guidance on developing local limits (or demonstrating they are not necessary). Inhibition was the driving criteria for the Zn MAIL.]

This office can find no reason to contradict ECCI's above assertions.

Quoting from ECCI's cover letter, "Actagro is open to working with the City to discharge at various rates [flows] or to begin discharging a lower rate [flow] for a trial period and increase the rate as needed to ensure that there are no adverse impacts to the [City's] wastewater treatment system." This would be a prudent exercise if the City decides to accept Actagro's wastewater.

Again, ADEQ cannot dictate the City's acceptance or denial of wastewater discharge from Actagro into the City's wastewater collection system.

It seems the information provided by ECCI would elicit your thoughtful consideration.

If you have any further questions or concerns please feel free to contact this office.

Sincerely,

Allen Gilliam  
ADEQ State Pretreatment Coordinator  
501.682.0625

AQ3QW AG

11-18-12

Allen  
tried to E-mail this but was returned  
too large on message.

I need for you to overlook this info  
and I'll try to call you.

Escola Waterfater  
James A Carlock

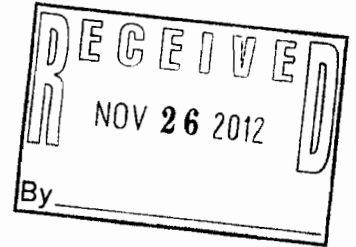
RECEIVED  
NOV 26 2012  
By 10324 JPD



13000 Cantrell Road • Little Rock, Arkansas 72223 • Phone 501.975.8100 • Fax 501.975.6789 • [www.ecci.com](http://www.ecci.com)

November 13, 2012

James Carlock, Wastewater Superintendent  
City of Osceola  
P.O. Box 443  
Osceola, AR 72370



Dear Mr. Carlock,

Actagro, LLC is requesting permission to discharge industrial process wastewater into the City of Osceola Publicly Owned Treatment system. I know that you have been involved in various discussions with them and with ADEQ regarding the regulatory status of the wastewater discharge. Actagro has taken steps to segregate the two waste streams and is proposing to only discharge the process stream that was determined by EPA to not be regulated by Categorical Pretreatment Guidelines. The regulated waste stream will be conveyed to a storage tank and recycled and reused in the process with no discharge. New data has been generated on the separated waste stream as shown in the attached documents.

The attached document has been prepared to demonstrate that the proposed discharge should not, under normal influent flow conditions, organically or hydraulically overload the treatment system. Additionally, the nutrient loading is demonstrated to be well within the normal values expected for domestic wastewater.

The zinc loading was calculated to be well below the limit established by the ADEQ for the City.

The City Pretreatment Ordinance Section 2.1 "Prohibited Discharges" was reviewed to ensure that the facility could comply with the requirements. Specifically, the discharge was evaluated for compliance with Specific Prohibition B.4 "No user shall introduce or cause to be introduced into the POTW the following pollutants, substances or wastewaters:

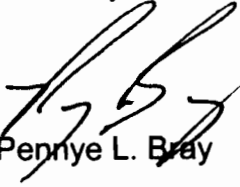
(4) Pollutants, including oxygen-demanding pollutants (BOD, etc.), released in a discharge at a flow rate and/or pollutants concentration which, either singly or by interaction with other pollutants, will cause interference with the POTW.”

The attached Engineering Evaluation demonstrates that the discharge (5,000 gpd maximum) will increase the BOD loading to the POTW by approximately 10.5%. The document also shows that increase loading is well within the organic and hydraulic capacity of the system. With a removal efficiency of 80% the discharge would not be expected to adversely impact the permitted mass loading limits.

Actagro is open to working with the City to discharge at various rates or to begin discharging a lower rate for a trial period and increase the rate as needed to ensure that there are no adverse impacts to the wastewater treatment system.

We have provided the attached documents for your review and would like to meet with you either by conference call or at your office to discuss options and or costs associated with the discharge.

Sincerely,



Penneye L. Bray

ECCL, Senior Project Manager

Cc: Ed Allred, City of Osceola, Director of Public Works

# ENGINEERING EVALUATION OF POLLUTANT LOADING TO THE CITY OF OSCEOLA POTW



**Actagro, LLC  
1300 Richard Prewitt Drive  
Osceola, AR 72370**

**November 2012**

**Prepared by:**



**13000 Cantrell Road  
Little Rock, Arkansas 72223  
Telephone (501) 975-8100 • Facsimile (501) 975-6789**

# Engineering Evaluation of Pollutant Loading to The City of Osceola POTW from the Actagro, LLC Industrial Wastewater Discharge

PREPARED BY:



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PENNYE L. DERRYBERRY BRAY, REM #7776,  
ECCI, SENIOR PROJECT MANAGER

REVIEWED BY:



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RODNEY K. BREUER, P.E.  
ECCI, VICE PRESIDENT

## 1.0 INTRODUCTION

Actagro owns and operates a manufacturing facility in Osceola, Arkansas for the production of organic acid based fertilizers. The manufacturing processes used at the facility are unique to Actagro and patented.

In general, the manufacturing activities consist of two distinct steps each of which generates a process related waste stream.

**Part 1** of the process involves the treatment and processing of Leonardite. Leonardite is a rich, organic strata developed from prehistoric plant and animal residues by anaerobic bacteria under heat, pressure, and time. The Leonardite is received into the Osceola facility in totes bags and staged for processing. The Osceola facility manufactures four organic acid variations (called PM's) that each involve complex patented extraction processes. There are several procedures used to extract the PMs. The facility utilizes three blender/reactor units to conduct the extractions. The blender is filled with very hot water prior to the adding of the leonardite and the chemical extraction take place. Due to the nature of the organic material, various extraction processes have been developed by Actagro. However, in general all of the extractions will fall into two general categories, acid and basic. The output of the extraction process is a black liquid that is conveyed to storage tanks to be used later in the reaction process. The outputs from the blenders are then separated to remove the insolubles. Wastewater is generated from the cleaning of the blenders, centrifuge, pipes, filters, tanks, etc. Currently, this water is conveyed to a storage tank.

**Part 2** of the process involves taking the PMs (organic acids) and reacting them with anhydrous ammonia and phosphoric acid using a process called "organic complexation". This reaction takes place within one of two large reactor vessels. This results in a unique organically complexed orthophosphate which has been proven to dramatically improve uptake efficiencies in plants and soil productivity. Micronutrients such as zinc and manganese are similarly complexed with the organic acids to produce a product line. Process wastewater is generated from the reaction process and cleaning of the various equipment. The water is collected and conveyed to a tank for storage. This water is filtered and reused within the facility process.



## **2.0 REGULATORY REVIEW**

Due to planned increases in production, the facility will generate more wastewater than can be reused in the process. The facility is investigating the potential disposal of the excess wastewater within the City of Osceola publicly owned treatment system. The City of Osceola does not have an approved pretreatment program, consequently, the Arkansas Department of Environmental Quality (ADEQ) will serve as the regulatory authority for the discharge of any regulated process wastewater discharges to the system. Actagro contacted Mr. Alan Gilliam, the ADEQ State Pretreatment Coordinator and requested a determination of the applicability of effluent guidelines to the facility process related discharge.

Effluent guidelines specific to the fertilizer point source category are found within 40 CFR 418. Subpart G contains specific requirements for discharges resulting from the production of mixed fertilizer and blended fertilizer. Because the Actagro process does not specifically fit the definition of mixed or blended fertilizer, Mr. Gilliam requested further clarification on the applicability of this subpart to the Actagro wastewater from Ms. Jan Pickrel, Environmental Protection Agency (EPA), Water Permits Division, Industrial Branch.

Ms. Pickrel determined that Part 1 of the process (Leonardite Processing) is a mineral processing step and is not subject to the effluent guideline within 40 CFR 418. Additionally, there is no effluent guideline or categorical pretreatment standard under 40 CFR 436 (Mineral Mining and Processing) for this type of discharge. Consequently, the discharge from the Part 1 process is not subject to any effluent guideline categorical standards. However, the discharge would be subject to any local limits imposed by the City pretreatment program.

Ms. Pickrel further determined that the discharge from Part 2 meets the definition of "organic complexation" which is covered as a mixing process in 40 CFR 418, Subpart G. Consequently, the waste stream generated from this process step would be regulated under the requirements of 40 CRFR 418.76. The documentation from Ms. Pickrel is shown in Attachment 1.

### 3.0 PROPOSED DISCHARGE QUALITY

Actagro currently recycles and reuses the process wastewater. However, they are planning to grow and anticipate that they will generate more wastewater than can be adequately reused. Consequently, the facility is requesting to discharge only the Part 1 (Leonardite processing) waste stream that was determined by EPA to be not regulated by the Categorical Pretreatment Standards.

Actagro has separated the two waste streams and conveyed them to separate tanks to eliminate the potential for any mixing. Analytical data was collected and engineering loading calculations were conducted to demonstrate that the discharge would not have adverse impacts on the city wastewater treatment system. The parameters tested were those that are limited in Osceola's permit and also those parameters indicated by the City that were of concern to them. Grab samples were collected by on the Part 1 waste stream and sent to ETC laboratories for analysis. The data is shown below.

Parameter Tested	Results
Ammonia Nitrogen	561 mg/L
Biochemical Oxygen Demand (BOD5)	2360 mg/L
Chemical Oxygen Demand (COD)	5790 mg/L
Nitrate (NO <sub>3</sub> -N)	< 0.100 mg/L
Nitrite (NO <sub>2</sub> -N)	< 0.100 mg/L
Nitrate + Nitrite as N	<0.100 mg/L
Total Suspended Solids (TSS)	130 mg/L
Total Phosphorus (T-PO <sub>4</sub> )	1.33 mg/L
Total Zinc	4.88 mg/L

#### 4.0 WASTEWATER TREATMENT SYSTEM LOADING CALCULATIONS

Actagro contracted ECCI to assist in demonstrating that the discharge would not adversely impact the wastewater system operated by the City of Osceola.

The City wastewater system is operated within the terms and conditions of NPDES Permit AR0021580. The wastewater treatment system consists of a 68 acre 4-cell facultative lagoon system with a design capacity of 2.5 million gallons per day (MGD). According to information obtained from Mr. James Carlock, City of Osceola Wastewater Treatment Supervisor, the wastewater system has a retention time of two to four months prior to discharging to the Mississippi River.

Conversations with Mr. Carlock indicated that the City had concerns about the high BOD value adversely impacting the wastewater system. Engineering calculations were performed to demonstrate that the discharge from Actagro would not result in an organic or hydraulic overloading of the system. The calculations are shown below.

##### 4.1 BOD Loading

Actagro Proposed Maximum Flow – 5,000 gallons per day (GPD)

Actagro BOD 5 – 2360 mg/L

City of Osceola 2012 average influent flow – 1.2 MGD

City of Osceola 2012 average BOD loading – 934 lbs/day

##### Actagro Discharge

$$\frac{2360 \text{ mg BOD}}{\text{L}} \times \frac{3.786 \text{ L}}{\text{gal}} \times \frac{1 \text{ lb}}{453,600 \text{ mg}} \times \frac{5,000 \text{ gal}}{\text{day}} = 98.5 \text{ lbs BOD/day}$$

The Actagro would increase the organic loading to the City wastewater system by 10.5%

##### Osceola treatment system design capacity

10 States Standards Design Criteria for facultative lagoons – 15-35 BOD/acre, use 25 in calculations.

25 lbs BOD/acre x 68 acres = 1700 lbs BOD per acre design capacity

Average influent loading with Actagro discharge – 1,032.5 lbs BOD/day

This value is well below the design capacity. Additionally, the average influent flow to the system is 1.2 MGD; consequently, the increase in flow resulting from the Actagro discharge will not hydraulically overload the wastewater system due to the 2.5 MGD design capacity.

Based on data provided by the City, the BOD removal efficiency for 2012 is approximately 80%. Consequently, with an influent loading of 1032.5 BOD per day and a removal efficiency of 80% the average BOD effluent value is expected to be approximately 206.5 lbs/day well below the monthly average permit limit of 625.5 lbs/day.

It should be noted that 5,000 gallons is expected to be the maximum discharge. The average discharge is expected to be approximately 2,500 gpd.

#### **4.2 Nutrient Loading**

The city had concerns that the discharge may increase the chance of algae blooms in the lagoons. Algae blooms are typically associated with excessive nutrient loading but typically will only occur during the hottest months of the year which are also generally the lowest discharge months due to the evaporation that take place within the lagoon cells. Osceola has conditions within their NPDES Permit that require monitoring and reporting of the nutrients Total Phosphorus and Nitrate+Nitrite Nitrogen. The analytical data indicated that Nitrate+Nitrite Nitrogen was not detected in the wastewater sample. Consequently, there should be no potential impacts to the nutrient loading from this chemical compound. Loading calculations were conducted for total phosphorus and ammonia to ensure that the discharge would not significantly increase the nutrient loading to the treatment facility. These calculations are as follows:

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**Total Phosphorus**

Actagro Discharge – 1.33 mg/L

Flow - 5,000 gpd

$$\frac{1.33 \text{ mg T-PO}_4}{\text{L}} \times \frac{3.786 \text{ L}}{\text{gal}} \times \frac{1 \text{ lb}}{453,600 \text{ mg}} \times \frac{5,000 \text{ gal}}{\text{day}} = 0.055 \text{ lbs T-PO}_4/\text{day}$$

Phosphorus data was not included with the City of Osceola spreadsheet. A value of 8.0 mg/L phosphorus was used for the calculations. This value was derived from published data on phosphorus loading in domestic wastewaters. The calculations are shown below:

Current average influent flow into Osceola WWTP – 1.2 MGD

Typical phosphorus loading in domestic wastewater – 8.0 mg/L

$$\frac{8.0 \text{ mg T-PO}_4}{\text{L}} \times \frac{3.786 \text{ L}}{\text{gal}} \times \frac{1 \text{ lb}}{453,600 \text{ mg}} \times \frac{1,200,000 \text{ gal}}{\text{day}} = 80 \text{ lbs T-PO}_4/\text{day}$$

Based on this calculation the Actagro discharge will have little impact on the typical phosphorus loading to the wastewater plant.

**Total Ammonia**

Actagro Discharge – 561 mg/L

Flow - 5,000 gpd

$$\frac{561 \text{ mg NH}_3}{\text{L}} \times \frac{3.786 \text{ L}}{\text{gal}} \times \frac{1 \text{ lb}}{453,600 \text{ mg}} \times \frac{5,000 \text{ gal}}{\text{day}} = 23.4 \text{ lbs NH}_3/\text{day}$$

Ammonia data was not included with the City of Osceola spreadsheet. A value of 25 mg/L ammonia was used for the calculations. This value was derived from published data on ammonia loading in domestic wastewaters. The calculations are shown below:

Current average influent flow into Osceola WWTP – 1.2 MGD

Typical ammonia loading in domestic wastewater – 25 mg/L

$$\frac{25 \text{ mg NH}_3}{\text{L}} \times \frac{3.786 \text{ L}}{\text{gal}} \times \frac{1 \text{ lb}}{453,600 \text{ mg}} \times \frac{1,200,000 \text{ gal}}{\text{day}} = 250 \text{ lbs NH}_3/\text{day}$$

Based on this calculation the Actagro discharge will increase the ammonia loading by less than 10%.

#### 4.4 Zinc Loading

Prior to the separation of the waste streams the analytical data (for the combined waste stream) indicated a zinc value of 1090 mg/L. However, it appears that the majority of the zinc is associated with the Part 2 process wastewater. Analytical data generated from the Part 1 wastewater shows a zinc value of 4.88 mg/L.

$$\frac{4.88 \text{ mg T-PO}_4}{\text{L}} \times \frac{3.786 \text{ L}}{\text{gal}} \times \frac{1 \text{ lb}}{453,600 \text{ mg}} \times \frac{5,000 \text{ gal}}{\text{day}} = 0.20 \text{ lbs Zn/day}$$

Spreadsheets obtained from ADEQ's Pretreatment web page, indicated that the City of Osceola has a zinc loading limit of 4.4 lbs/day. This value is well below the 4.4 lbs/day local loading limit established for the wastewater discharge.

## 5.0 SUMMARY

Actagro has two process related waste streams. The ADEQ Pretreatment Section and the EPA have determined that the Part 1 waste stream is not subject to any Categorical Pretreatment Standards and is therefore considered an unregulated waste stream. The Part 2 waste stream is subject to the Categorical Pretreatment Standards in 40 CFR 418 Subpart G (40 CFR 418.76).

The two waste streams have been separated and will be conveyed to designated storage tanks within the facility. The Part 2 waste stream (regulated) will be recycled and reused in the process. Actagro is proposing to discharge the Part 1 (unregulated) waste stream to the City of Osceola. Engineering calculations presented above indicate that the discharge will not, under normal flow scenarios, result in organic or hydraulic overloading of the system. Additionally, the zinc loading is well below the loading limit provided by ADEQ for the City. The nutrient loading associated with phosphorus and nitrate+nitrite nitrogen are also fairly low and well within the expected values for a domestic wastewater discharge.

# Attachment 1

## EPA Regulatory Explanation



Please keep this office apprised of your decision.

Sincerely,

Allen Gilliam  
ADEQ State Pretreatment Coordinator  
501.682.0625

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-----Original Message-----

From: Jan Pickrel [mailto:Pickrel.Jan@epamail.epa.gov]  
Sent: Friday, February 17, 2012 2:20 PM  
To: Gilliam, Allen  
Cc: Ahmar Siddiqui  
Subject: Categorical Request: Fertilizer mixing/blending company in a non-pretreatment city - 40 CFR 418.76 (PSNS) applicability?

Dear Allen -

You requested assistance in determining whether a facility's process is subject to the categorical standards of 40 CFR 418, Fertilizer Manufacturing. I have reviewed the process description you submitted via email on September 20, 2011, for the Actagro facility in Osceola, AR [process description dated 9/13/2011].

In addition, I have reviewed the Development Document for Fertilizer Manufacturing., dated 1975, as well as the associated Federal Register notices from 1974 and 1975, and in particular Subpart G of the regulations, "Mixed and Blend Fertilizer Production Subgroup.

In the process description, the process is described as having 2 distinct parts; first, treatment and processing of leonardite, followed by a second step of mixing with ammonia and phosphoric acid.

Part 1 - processing of leonardite - is described as follows:

Leonardite is put through inductors and into blenders of hot water.

"Using various methods, the outputs from the blenders are then separated to remove the insolubles because the leonardite is a mined product which contains soil particles and insoluble lignite."

Part 2 is a mixing of the extracted "(organic acids) and reacting them with anhydrous ammonia and phosphoric acid using a process called 'organic complexation'". Additional micronutrients are complexed with the organic acids, including zinc and manganese compounds.

The Federal Register for Subpart G = Mixed and Blend Fertilizer Production Subgroup [39 FR 36095, October 7, 1974] states:

"The mixed and blend fertilizer plants are subcategorized primarily on the basis of raw materials and the manufacturing and effluent control processes involved. The raw materials of this segment are principally products obtained from the basic fertilizer processes. The effluent control practices of the mixed and blend subcategory involve containment and reuse of the wastes."

"(2) Mixed and blend fertilizers. a mixed fertilizer is manufactured by the mixing of straight and mixed fertilizer materials through chemical reactions into complete mixed goods. The process involves

the controlled rate addition of both dry and liquid raw materials to a granulator for mixing. The mixed fertilizer product is dried, sized, and cooled and then conveyed to storage or shipment. Significant process waste waters result from the use of water scrubbing of drier, cooler, and ammoniator exhaust gases. Water is also used for pump seals and plant wash-up. Spills and leaks and nonpoint source discharge also account for a small portion of the waste water load."

"The blend fertilizer process has no liquid requirements. Process raw materials include only dry materials, and only dry type air effluent control equipment is used. Treatment technologies are not required for this process to achieve no discharge of process waste water pollutants to navigable waters. For mixed fertilizer plants the effluent control system consists of a closed loop contaminated water system with a small retention pond for settling and clarifying the contaminated water. Pond water is returned for use in the granulator and in wet scrubbers which remove noxious gases and particulate material."

The term "mixed fertilizer" and "blend fertilizer" are both defined in the regulation at 40 CFR 418.71(b) and (c) respectively.

40 CFR 418.71(b) The term mixed fertilizer shall mean a mixture of wet and/or dry straight fertilizer materials, mixed fertilizer materials, fillers and additives prepared through chemical reaction to a given formulation.

40 CFR 418.71(c) The term blend fertilizer shall mean a mixture of dry, straight and mixed fertilizer materials.

I found a definition for "straight" fertilizer materials through a tabulated list page 13 of the Development Document [adobe page 23], which separates "straight" versus "mixed" fertilizers.

Straight fertilizers are Ammonia, Urea, Ammonium Nitrate, Ammonium Sulfate, Phosphoric Acid, Normal Superphosphate, Triple Superphosphate. Examples of mixed fertilizers in this table include Ammonium Phosphates.

Part 2 of the facility's process description fits the definition of mixing 2 different "straight fertilizers": "(organic acids) and reacting them with anhydrous ammonia and phosphoric acid using a process called 'organic complexation']".

I conclude that:

- Part 1 is treatment and processing of leonardite, realistically a mineral processing step. There is no effluent guideline nor categorical pretreatment standard under 40 CFR 436, Mineral Mining and Processing, for this. The wastewater or "reclaimed water" generated here would not be subject to categorical standards, but would be subject to local limits.

- Part 2 is "organic complexation" which is covered as a mixing process in Subpart G of 40 CFR 418. Any wastewater generated as part of this part is subject to 40 CFR 418.76.

Please let me know if you have any questions or concerns.

Jan Pickrel Water Permits Division, Industrial Branch US Environmental  
Protection Agency  
phone: (202) 564-7904.  
fax: (202) 564-6431.  
pickrel.jan@epa.gov

**This communication (including any attachments) may contain privileged or confidential information intended for a specific individual and purpose, and is protected by law. If you are not the intended recipient, you should delete this communication and/or shred the materials and any attachments and are hereby notified that any disclosure, copying, or distribution of the communication, or the taking of any action based on it, is strictly prohibited. Thank you.**

**Attachment 2**  
**Analytical Data on Non-Regulated**  
**Waste Stream**



# ENVIRONMENTAL TESTING & CONSULTING, INC.

2790 Whitten Road Memphis, Tennessee 38133 (901) 213-2400 Fax (901) 213-2440  
"A Laboratory Management Partner"

9/24/2012

Actagro, LLC  
Mr. Brian Thompson  
1300 Richard Prewitt Drive  
Osceola, AR, 72370

Ref: Analytical Testing  
ETC Report Number: 12-261-0266  
Client Project Description: Reclaim Water  
Osceola, AR

Dear Mr. Brian Thompson:

Environmental Testing and Consulting, Inc. received sample(s) on 9/17/2012 for the analyses presented in the following report.

The above referenced project has been analyzed per your instructions. The analyses were performed in accordance with the applicable analytical method.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

The results are shown on the attached Report of Analysis(s). Results for solid matrices are reported on an as-received basis unless otherwise indicated. This report shall not be reproduced except in full and relates only to the samples included in this report.

Please do not hesitate to contact me or client services if you have any questions or need additional information.

Sincerely,

Randy Thomas  
Project Manager

*Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis.*

Alabama #40750	Louisiana #04015	VA NELAP #460181	Texas #T104704180-11-6	Arkansas #88-0650
Mississippi	California #09267CA	NC #415	Oklahoma #9311	Virginia #00106
Kentucky #90047	Tennessee #TN02027	EPA #TN00012	Kentucky UST #41	Kansas #E-10396





# ENVIRONMENTAL TESTING & CONSULTING, INC.

www.etcmemphis.com

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Memphis, Tennessee 38133

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Fax (901) 213-2440

"A Laboratory Management Partner"

07106

Actagro, LLC

Mr. Brian Thompson

1300 Richard Prewitt Drive

Osceola, AR 72370

Project Reclaim Water

Information : Osceola, AR

Report Date : 9/24/2012

Report Number : 12-261-0266

## REPORT OF ANALYSIS

Received : 9/17/2012

Lab No : 95646

Matrix: Aqueous

Sample ID : Grab

Sampled: 9/17/2012 9:05

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Ammonia Nitrogen	561	mg/L	10.0	1	09/20/12 10:00	EWB	4500-NH3D
Biochemical Oxygen Demand (5-day)	2360	mg/L	1000	1	09/17/12 13:00	TKM	5210-BOD
COD (Chemical Oxygen Demand)	5790	mg/L	150	1	09/19/12 08:55	TKM	5220-D
Nitrate (NO3-N)	<0.100	mg/L	0.100	1	09/17/12 14:01	RQE	EPA-300.0
Nitrite (NO2-N)	<0.100	mg/L	0.100	1	09/17/12 14:01	RQE	EPA-300.0
Nitrate+Nitrite-N	<0.100	mg/L	0.100	1	09/17/12 14:01		EPA-300.0
Total Suspended Solids	130	mg/L	8	1	09/19/12 09:33	KAT	2540D
Total Phosphorus	1.33	mg/L	0.625	1	09/18/12 09:20	KAT	4500-PE
Total Zinc	4.88	mg/L	0.010	1	09/19/12 16:12	BKN	EPA-200.7

### Qualifiers/ Definitions

\* Outside QC limit  
MQL Method Quantitation Limit

DF Dilution Factor



Cooler Receipt Form

Customer Number: 07106
Customer Name: Actagro, LLC
Report Number: 12-261-0266

Shipping Method

Fed Ex UPS US Postal Client Lab Courier Other

Shipping container/cooler uncompromised? Yes No
Custody seals intact on shipping container/cooler? Yes No Not Required
Custody seals intact on sample bottles? Yes No Not Required
Chain of Custody (COC) present? Yes No
COC agrees with sample label(s)? Yes No
COC properly completed Yes No
Samples in proper containers? Yes No
Sample containers intact? Yes No
Sufficient sample volume for indicated test(s)? Yes No
All samples received within holding time? Yes No
Cooler temperature in compliance? Yes No
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun. Yes No
Water - Sample containers properly preserved Yes No N/A
Water - VOA vials free of headspace Yes No N/A
Trip Blanks received with VOAs Yes No N/A
Soil VOA method 5035 - compliance criteria met Yes No N/A
High concentration container (48 hr) Low concentration EnCore samplers (48 hr)
High concentration pre-weighed (methanol -14 d) Low conc pre-weighed vials (Sod Bis -14 d)
Special precautions or instructions included? Yes No

Comments:

Any regulatory non-compliance issues will be recorded on non-compliance report.

Signature: Brooke Shoup

Date & Time: 09/17/2012 12:02:44



# ENVIRONMENTAL TESTING & CONSULTING, INC.

2790 Whitten Road Memphis, Tennessee 38133 (901) 213-2400 Fax (901) 213-2440



Actagro, LLC  
Reclaim Water

12-281-0266  
07108  
2012-09-17  
12 01 03

Company Name Actagro, LLC		Customer Number 07106		Telephone (870) 622-9404		RUSH <input checked="" type="checkbox"/> ICE <input checked="" type="checkbox"/>	
Site Name Osceola AR			Project Comment			FID Number	
Project Reclaim Water		Project Number		PO Number			
Project Manager / Contact Ms Lee Hedger				E-mail Hedger@actagro.com			
Sample ID	Container Type	Collected Date / Time	# Cont	Preservative	Grab / Comp	Matrix	Analyses
Home 9.12.12	Plastic - Quart	9-17-12 9:05 AM	1	NONE	Grab	Aqueous	BOD, TSS
Surface Acid	Plastic - Pint	9-17-12 9:05 AM	1	H2SO4 - Sulfuric Acid	Grab	Aqueous	COD, Ammonia, Nitrate+Nitrites, Phosphorous
Water Acid	Plastic - Pint	9-17-12 9:10 AM	1	HNO3 - Nitric Acid	Grab	Aqueous	Zn

PH - 6.41  
Temp  
9-17-12 AM  
9:17-12

Sampled By Jack Quinn	Method of Shipment Delivery	Blank / Cooler Temperature 10°C	Remarks
Relinquished By (sign) [Signature]	Date / Time 9/17/12 10:59	Received By (sign)	Date / Time
Relinquished By (sign)	Date / Time	Received By (sign)	Date / Time
Relinquished By (sign)	Date / Time	Received by Lab (sign) [Signature]	Date / Time 9-17-12 10:59