**NASSAu County’s s.e.pt.i.c. program Design Manual & Guidance Document**

**FOR [INSERT MODEL NUMBER]**

*[INSERT TECHNOLOGY DIAGRAM]*

*[INSERT COMPANY LOGO AND CONTACT INFORMATION]*

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7. **DEFINITIONS**
8. **INTRODUCTION**

The INSERT TECHNOLOGY NAME] wastewater treatment plant is a [DESCRIBE TECHNOLOGY].

[INSERT TECHNOLOGY SCHEMATIC]

Figure X – [TECHNOLOGY] Schematic

*APPLICANT INFORMATION & HISTORY WITH IA TECHNOLOGIES:*

[Describe manufacturers background and history with IA technologies, including jurisdictions where the technology is approved, number and age of systems installed in the US e.t.c]

[STATE AND APPROVALS, CERTIFICATIONS, AND PROVEN RESULTS FOR BOD/TSS/TN]

*CERTIFICATION AND PERFORMANCE* **[LIST ANY CERTIFICATIONS AND PERFORMANCE RESULTS]**

The [INSERT TECHNOLOGY] Series has NSF/ANSI Standard 40 & 245 certification. The maximum 7-day arithmetic mean was 7 mg/L for CBOD5 and 22 mg/L for total suspended solids, both below the allowed maximums of 40 and 45 mg/L, respectively. The maximum 30-day arithmetic mean was 5 mg/L for CBOD5 and 12 mg/L for total suspended solids, both below the allowed maximums of 25 mg/L and 30 mg/L, respectively. The [INSERT TECHNOLOGY AND MODEL NUMBER] produced an average effluent Total Nitrogen of 15 mg/L, which resulted in a 58% reduction in the influent Total Nitrogen.

1. **TECHNOLOGY SUMMARY**

**Treatment Process Description**

The X Series Onsite Wastewater Treatment System (OWTS)uses an extended aeration activated sludge process to achieve treatment. In the activated sludge process, microorganisms remove soluble contaminants from the wastewater, using them as a source of energy for growth and production of new microorganisms. The organisms tend to be flocculent and form clumps, or floc, that physically entrap particulate organic matter. The organic matter is attacked by extracellular enzymes that solubilize the solids to make them available to the microorganisms as a food source. The conversion of the organic matter from soluble to biological solids allows for removal of the organic matter by settling of the solids in the treatment process.

Extended aeration is a modification of the activated sludge process in which the microorganisms are allowed to remain in the treatment process for long periods of time. The large inventory of biological solids in the process provides a buffer for shock loading of organic matter. The long aeration period allows for the organisms in the system to consume themselves, reducing the total amount of solids produced by the treatment process.

The organisms primarily responsible for the degradation of organic matter, and conversion of ammonia nitrogen to nitrate nitrogen, are aerobic bacteria. As such, transfer of oxygen to the wastewater is critical during the aerobic portion of the treatment process. The aeration system also provides for the mixing of the wastewater and organisms to facilitate contact between the organic contaminants in the wastewater and the organisms that provide for removal of the contaminants.

Denitrification is an anoxic process where nitrate serves as oxygen equivalent (electron acceptor) for bacteria, and the nitrate is reduced to nitrogen gas. Denitrifying bacteria are facultative organisms that can use either DO or nitrate (NO3) as an oxygen source for metabolism and oxidation of organic matter. If both are present, the bacteria will tend use the dissolved oxygen first, so it is important to maintain dissolved oxygen levels as low as possible to promote denitrification.

**Treatment Train Configuration**

The X Series Onsite Wastewater Treatment System (OWTS) is sold as a self-contained system consisting of a Primary Treatment Tank and an X Treatment Tank which features an aeration compartment, clarifying cone, and recirculation pump. The Treatment train is summarized in the five-step process outlined below:

1. Collection: Sewage flows from the home or facility into a watertight primary tank or chamber. The solids settle and the liquid effluent flows by gravity through an effluent filter to the system.

2. Treatment Unit: The [UNIT NAME] provides biochemical treatment through passive biofiltration principles. The X TECHNOLOGY ample surface area for biological growth. The media contains many voids to accommodate optimum air flow and water flow. Pretreated effluent is sprayed over the coconut fiber media using specially designed helical spray nozzles that provides even distribution over the entire surface area within the mod. Treated effluent is recirculated multiple times which optimizes treatment.

3. Dispersa:l The highly treated effluent exits the unit and

Figure X – Technology Process Flow Schematic

1. **DESIGN INFORMATION**

**Tank Construction**

**Treatment Media**

**Component(s) Construction**

**Air and Diffuser System (if applicable)**

**Design Tables**

Table [X]. System Sizing Information (rated for use on Long Island at 110 gallons per bedroom per day)

|  |  |  |  |
| --- | --- | --- | --- |
| Bedrooms | Design Flow (gpd) | Model  # | Daily Rated Treatment Capacity  (gpd) |
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Table [X]. Tank Volumes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Model | Daily Rated Treatment Capacity (gpd) | Primary Treatment  Tank Volume (gal) | Aeration Chamber Volume (gal) | Clarification Chamber Volume (gal) | Total Operating Volume (gal) |
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| --- | --- | --- | --- | --- |
| Model | Primary Treatment Tank Diameter  (inches) | ATU Tank Diameter  (inches) | Primary Tank Inlet Invert  (inches) | Clarifying Tee Outlet Invert  (inches) |
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Table [X]. Tank Dimensions - add table(s) for multiple tank systems

Table [X]. Compressor or Pump Specifications

|  |  |  |
| --- | --- | --- |
| Model | Rotary Comp | Linear Comp |
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Table [X]. Control Panel Models

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| --- | --- | --- | --- |
| Model | Gravity Leaching | Pressurized Shallow Drainfields (PSDs)  Micro Dose Time Dosing | Pressurized Shallow Drainfields (PSDs)  Demand Dosing |
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**UPLIFT RESTRAINT**

Uplift restraint, or ‘anti-floatation’ is a requirement for all sites with high groundwater table elevations. Examples of uplift restraints include collars, blocks, and pads. Table X and Figure X depict uplift restraint methods for Hydro-Action AN Series.

Table [X].

Uplift Restraint

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Model | Total Volume  (GAL) | Total  Tank Weight  (LBS) | Water Weight (LBS) | Empty Weight Buoyancy (LBS) | 25% Safety Factor (LBS) | Total Uplift Restraint (LBS) | LBS of Concrete Required |
|  |  |  |  |  |  |  |  |
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Figure [X]. Uplift Restraint Diagram

**COLD WEATHER CONSIDERATIONS**

**APPENDIX**