Wastewater Treatment Plants: Air Quality & Odour Monitoring Solutions

PRODUCT BROCHURE



WWTP AIR QUALITY OVERVIEW

- Air Quality Concerns 05
 - Odour Release 05
- Limiting Exposure & Health Risks 05
 - Facility Odour Map 06
 - How We Can Help 07
- Comprehensive Monitoring Program 08
 - Quick Tips 09

04

11

16

- Stationary Monitoring Devices 10
 - Mobile Odour Patrols 10
 - Personal Monitoring 10

ODOUR TRACKING

- Identify Unknown Odour Sources 11
- Odour Complaint Registration 12
- Complaint Logging Software 13
- Odour Complaint Justification 14
 - Odour Complaint Analysis 15

SCENTROID DEVICES

REFERENCES

- SL50 Scentinal 16
- SL50 Scentinal Spec-Sheet 17
- CTair Continuous Air Quality Monitor 18
 - CTair Spec-Sheet 19
 - DR2000 Flying Laboratory 20
 - DR2000 Spec-Sheet 21
 - PMD100 Personal Safety Monitor 22
 - PMD100 Spec-Sheet 23
 - SM100i Intelligent Olfactometer 24
 - SM100i Spec-Sheet 25

SCENTROID SERVICES	
Servio Automo	ce Summary 2 ated Reports 2
TRAINING, WARRANTY, TECHNICAL	SUPPORT
REFERENCES	



Letter from Scentroid's CEO

Scentroid's mission is to empower our clients with vast in-depth knowledge, state-of-the-art instruments, and the most extensive customer support. To this end, we strive in every aspect of our operation to put our client first and to use our research expertise to develop the most innovative and effective products and services in the sensory industry. We envision a future where environmental impacts will be easily and accurately measured and mitigated.

Ardevan Bakhtari

Dr. Ardevan Bakhtari CEO, Scentroid

Wastewater Treatment Plant Air Quality Overview

Wastewater treatment plants have a responsibility to protect the environment and the community. Poor air quality can result in unpleasant odours that can negatively impact nearby sensitive receptors. By monitoring the air quality in the plant, the plant operators can take proactive steps to prevent odours from escaping into the surrounding area. Regular monitoring can help identify the sources of unpleasant odours, allowing your plant to take corrective actions to reduce emissions, maintain good air quality, and avoid potentially costly litigation!

Air Quality Concerns

Concerns primarily stem from the presence of hazardous gases and chemicals generated during the treatment process. The most common pollutants include hydrogen sulfide, ammonia, and methane, which pose health risks to employees working in the plant and can negatively impact the surrounding community. In addition, these gases are flammable and explosive, posing a significant safety risk to the plant and its employees. The Occupational Safety and Health Administration (OSHA) requires employers to monitor the air quality in the workplace and take measures to reduce employee exposure to harmful pollutants. All sources of odour

Odour Release

Sludge delivery involves the handling and transport of concentrated, decomposing sludge, which emits foul odors during transfer and loading operations. Disinfection, necessary for eliminating harmful microorganisms, often involves the use of chemicals like chlorine or ozone, which can produce strong and unpleasant odors if not properly contained. Pumping wastewater can also release odors due to the decomposition of organic matter. During the clarifying process, where solids are separated, the treatment and accumulation of these solids can generate foul smells.

Limiting Exposure & Health Risks

Regulations and fines resulting from non-compliance can also have a significant financial impact on your wastewater treatment plant. Regular air quality monitoring can help ensure compliance with environmental regulations and prevent you from being subject to fines and legal action. By taking proactive measures to maintain good air quality and prevent odour emissions, wastewater treatment plants can avoid costly litigation, which ultimately saves money and protects the reputation of your facility.

Ultimately, the financial savings and reputational benefits of good air quality monitoring make it an essential investment for any wastewater treatment plant.



Sensitive Receptors

Track your sensitive receptors, and view the direct effects an emission source may have on them, down to the odour unit per second value!

Tracking Unknown Emission Sources

Using 'Event Triangulation', SIMS3 can pinpoint the location of unknown sources and determine their contribution to the complaints received.

Monitoring Device Perimeter

A typical wastewater facility requires approximately 4-5 air quality monitoring devices strategically stationed around the facility perimeter based on collected data.

Facility Events

Track the impact of upset conditions, odour filter maintenance, sludge deliveries and other facility events using our SIMS3 AI algorithm.

Tracking Known Odour Sources

Several facility processess may be directly contributing to errant odours. SIMS3 can track the emission rate of all odour sources using ambient monitors and reverse dispersion modeling.

Odor Complaints

Once odour complaints are filed, SIMS3 will collect them and present them in a visual, mappable format. SIMS3 will also analyze the contributor of the source that led to the complaint.

How Can We Help?

The combination of stationary monitoring, odour patrolling, and personal safety device monitoring provides a comprehensive 3 tiered approach to air quality monitoring in wastewater treatment plants.

Stationary monitoring devices allow for continuous monitoring of air quality in and around your facility, providing valuable data on the overall level and distribution of pollution.

Odour patrols offer an additional layer of monitoring, enabling the detection of hot-spots along with providing granular data on the spatial and temporal patterns of air pollution.

Personal safety monitoring devices provide real-time data on worker exposure levels, ensuring individual workers are protected from potential health hazards.

Design a comprehensive monitoring program tailored to your wastewater treatment facility. This includes equipment needs, software support, source triangulation, and more.

Comprehensive Monitoring Program

Stationary Equipment

Scentroid engineers, builds, and services our own line of powerful air quality monitors.

Odour Patrol Equipment

Equipment built to assist patrollers with monitoring a predefined optimized route.

Unknown Source Triangulation

Scentroid employs powerful AI within SIMS3 to identify and tag previously unknown sources

Odour Complaint Justification

Our cloud-based software analyzes complaint data and determines if they were attributed to your facility.

Odour Complaint Analysis

A deep dive into what may have caused an odour complaint and analyzing it's contributing sources



Quick Tip #

For a typical 25-30 acre facility, we recommend 5-6 continuous air quality monitoring devices (CTair or SL50)

Quick Tip #2

Look into the future using our SIMS3 predictive plume module, and See how your odour plumes might evolve within the next 48 hours.

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Quick Tip #3

Track local complaints using SIMS3. Our software features a complaint classification system that will inform you if complaints are justified or not.



Stationary Monitoring

Wastewater treatment facilities can generate a range of potentially harmful air pollutants, such as hydrogen sulfide, ammonia, and volatile organic compounds (VOCs). To monitor your plant, Scentroid recommends our CTair and our Scentinal stationary continuous air quality monitors.





Mobile Odour Patrols

The Odour Patrol methodology was developed by Scentroid in 2015 to map the odour impact of the entirety of the city of Ras Laffan in Qatar, and has since been used in Canada, UAE, USA, Italy, Chile and many more countries with great success. This combines the use of the field olfactometer SM100i, and handheld or mobile ambient air quality monitors. These could range from the Scentroid US20, to the DR2000 flying laboratory, and the TR8 Odotracker product lines.

Personal Monitoring

Personal safety air quality monitoring devices in a wastewater treatment facility are crucial for protecting the health and safety of individual workers. These devices can alert them to potential hazards and prompt them to take necessary precautions, such as utilizing respiratory protection or moving to a safer location. These devices can even be used to assess the overall effectiveness of pollution mitigation efforts.

Air quality monitoring in wastewater treatment plants not only has safety and environmental benefits but also economic advantages.



Identify Unknown Odour Sources

If you are trying to determine the location of potentially unknown sources, SIMS3 offers a triangulation mode and identifier to assist you with pinpointing unknown sources.

SIMS3 is capable of updating of the estimated emission rate of all known sources based on real ground-level odor and air pollution measurements. Once an odor source has been tagged and monitored, SIMS3 will begin to compare estimated odor levels from dispersion modelling to the actual measurements collected with odor monitoring equipment. The AI will adjust and update its emission rates to compensate.

Ground level readings are then used by SIMS3 to conduct back-trajectory to identify unknown sources. Continuous pollution data and field olfactometric data are used along with meteorological data to triangulate the exact location of an odor source.

Our innovative SIMS3 software will conduct both back trajectories and emission rate estimation automatically and continuously every 10 minutes.

Odour Complaint Registration

An odor complaint can be registered by the residents or a sensitive receptor through the use of a mobile application, through our live odour tracking website, or by a system administrator when complaint is received. The information collected includes time of incident, location, duration, perceived intensity, and description.

SIMS3 can be configured to notify a plant operators of the recently registered odor complaint via SMS and email.

Image to the right: Community app for registering and logging a new odor complaint





Complaint Logging Software

New odour complaints could also be logged using our cloud-based complaint logging software. Information collected includes time of incident, location, duration, perceived intensity, and description.

This platform is public and displays registered odour complaints, but all collected user information remains private and secure.

Our SIMS3 algorithm will determine the validity of registered complaints, and then create a list for the Scentroid team of all potential sources for the odour.

Odour Complaint Justification

Odor complaints are automatically analyzed to determine the individual validity of each against a known odor source or event. They're then visually marked as justified (red), not justified (green), and to be justified (yellow). For each complaint the user will receive a list of all contributing sources and events. Complaints with no known sources will be analyzed to determine validity and to identify possible locations of the unknown contributing source (See triangulation).

All odor complaints are logged, and can be exported from SIMS3 in an easy to understand format.





Correlation Factor (r)

Peel Wastewater / North / SL15325 / H2S High Correlation: 0.8 (r)

Peel Wastewater / South / CT15425 / CH4 High Correlation : 0.7 (r)

Peel Wastewater / South / CT15425 / SO2 High Correlation: 0.7 (r)

Peel Wastewater / North / SL15325 / H2S High Correlation : 0.6 (r)

Perry's Landfill / CTair N. Fence / CT17212 / SO2 Medium Correlation : 0.4 (r)

Odour Complaint Analysis

Scentroid SIMS3 offers a correlation module to help determine the connection between events and sources of strong odours. With this feature, SIMS3 is able to identify the events that have caused the greatest odours and also determine the contributing sources of unpleasant smells. This information can be invaluable to wastewater treatment facilities that must adhere to a specific mandate or odour regulation.

Another unique feature of SIMS3 is its ability to associate process events with odour increases. By recording the facility's process events, SIMS3 can detect any odour increases that may occur during these events. This information can be used to identify any potential problems in the facility's operations, which may be contributing to poor air quality. With this knowledge, wastewater treatment plants can take proactive steps to address any issues and maintain a healthy environment for their employees and neighboring communities.



STATIONARY MONITOR: SL50 Scentinal Overview

Scentinal is a continuous ambient pollutant and odor emission monitoring system which operates through high accuracy (ppb level) sensing technology. Scentinal can provide simultaneous monitoring of odorous and non-odorous gases such as Hydrogen Sulfide (H2S), Sulfur Dioxide (SO2), Ammonia (NH3), Methane (CH4), Carbon Dioxide (CO2), and many other Volatile Organic Compounds (VOCs).

Scentinal uses up to 20 sensing modules ranging from Photo-Ionization Detectors, Non-Dispersive Infrared Detectors, Electro-Chemical Cells, Laser Scattered counters and Metal Oxide sensors. The data collected from sampling is stored locally and is also transmitted to the cloud server, providing easy accessibility. The Sensor Information Management System (SIMS3) is used to store and display the results from monitoring and sampling campaigns while also providing capabilities for remote configuration, calibration, and diagnosis of multiple Scentinal units.

Product Name	Scentinal SL50
Maximum # of Sensors	20
Type of Sensors	PID, NDIR, EC, Laser Particulate counter, and MOS
Sampling rate	1 per minute
# Of Sampling Ports	1 to 2
Weight	81 lbs
Size	24" x 20" x 8"
Power Requirements	100-240V 50/60Hz 2A
Power Consumption	30W without AC - 150W with AC
Communication	3G/4G (default), LAN (default), WIFI (optional), MODBUS
On-board data Storage	64GB - SD Card
Cloud Server	Included by Default
On-Board Server	Included by Default
User Interface	7" touch screen on Panel door and
	Remote access Sensor Information Management System
Ambient Temperature	0 to 35 °C without AC system
Range	-50 to +50 °C with Heating and AC system
Sample Conditions	-50 to +50°C and 10 – 90% RH without predilution system
	-50 to 120°C and 0 – 100% RH with pre-dilution system
Calibration	Manual, using calibration gas and on-board screen
	Optional, automatic calibration using built-in calibration gas
Warranty	24 months full warranty on all parts including sensors
Sensor Replacement	Sensor dependent – first 2 years covered by warranty
Frequency	
Software	SIMS3 - Sensor Information Management System - free
	access for life of product
Cabinet	NEMA 4X
Mounting Hardware	Wall mounting hardware included



stationary monitor: CTair Overview

Compact, cordless, easy to use, high accuracy sensing. The CTair revolutionizes the air quality monitoring network industry.

The CTair monitoring station is a fixed unit that collects information from a variety of sensors and presents the data in an easy to understand graphical interface. By applying information collected from multiple data points, the CTair allows the user to gain a complete understanding of the chemical compounds being monitored. It has been designed to be dispatched into a network of CTair units. Due to its lightweight design the CTair unit can easily be installed and mounted to a variety of fixtures.

CTair units work in tandem to predict and collect data for an accurate air quality assessment in a large space. Temperature and humidity compensation utilized by our AI modeler is able to predict pollutant levels to 96% of true concentration. The applications of a CTair unit in a wastewater treatment plant are limitless.

Product Name	Scentroid CTair
Maximum # of Sensors	11 11 (4xEC, 1xCO2, 1xPID, 1xCH4, 1xPM, T, RH, Barometer)
Type of Sensors	PID, NDIR, EC, Laser Particulate counter, Temp, RH, Pressure
Sampling rate	Approximately 1 per minute
Weight	4.5 kg with solar panel
Size	19 x 29 x 14 cm for CTair, 37 x 34 cm for optional solar panel
Power Requirements	Solar power and AC power - 110 - 240 VAC
Battery Only Runtime	36 hours (base model)
LED Indicator	Color-changing LED light displaying unit status
Communication	WiFi, 3G, 4G, LoRa
On-board data Storage	64GB - SD Card for long term continuous logging
Cloud Server	Included by Default, data logging, analysis, alarms, & more.
Temp., Humidity Range	-40 to 40°C, 10 - 90% Relative Humidity (RH)
Device Health	Daily sensor health checks, provides replacement reminders
Design Rating	IP53 casing, securable by cable/pad lock
Calibration	Factory calibration to fully documented procedures in ac-
	cordance with our ISO 9001 quality management system
Warranty	24 months full warranty for all parts including sensors
Sensor Replacement	Sensor dependent – first 2 years covered by warranty
Mounting	Configurable for wall or pole mount
	Custom mounting solutions can be created upon request



DR2000 Flying Laboratory

The Scentroid DR2000 flying laboratory is a state-ofthe-art drone-based air quality monitoring system that can be used to determine air quality concerns in mining operations. Equipped with a range of sensors, including particulate matter sensors, gas sensors, and meteorological sensors, the DR2000 can quickly and easily survey large areas of the mine and provide accurate, real-time data on air pollution levels.

This data can be used to identify pollution hot-spots, track the movement of pollutants, and evaluate the effectiveness of pollution control measures. The DR2000 is particularly useful for mining operations that cover large areas or have hard-to-reach areas, such as underground mines. The system is also highly flexible, allowing for customization to meet the specific needs of different mining operations.

By using the DR2000 flying laboratory, mining operators can obtain valuable data on air quality concerns in their operations, enabling them to make informed decisions and take effective action to protect the health and safety of workers and nearby communities.

Product Name	DR2000 Flying Laboratory
Maximum # of Sensors	11 (4xEC, 1xCO2, 1xPID, 1xCH4, 1xPM, T, RH, Barometer)
Type of Sensors	PID, NDIR, EC, Laser Particulate Counter, Temp, RH, Pressure
Sampling Rate	Approximately 1/s
Sampling Port	Single sampling port with probe > 1 LPM flow-rate
Probe Length	44 cm or 88 cm (switchable)
Weight	520 - 640g
Size	23 cm x 10.8 cm x 10.3 cm
Time in Flight	Drone dependent, optimal is 30 minutes
Communication	LoRa, GSM/WiFi
On-Board Data Storage	16 GB SD Card
Cloud Server	Included by Default
Ground Station	10" tablet with LoRa communication and DRIMS2 Software
Software	DRIMS2 system (ground-station + web client)
Temperature Range	5 °C to 40 °C
Operating Humidity	10 - 90%
Calibration	Auto-zero before flight. Can be optimized using GD600
Warranty	24 months full warranty to all parts including sensors
Sensor Replacement	Sensor dependent - first 2 years covered by warranty
Mounting Hardware	Customizable mounting lid - default mounting for Inspire
	2 drone. Triple mounting safety redundancy to the drone
	(mounting screws, counter-weight ties, zip ties)sensors
Location and Altitude	GPS based with barometric pressure augmentation



PERSONAL SAFETY MONITOR: PMD100 Personal Safety Monitor

Using the Scentroid PMD100 personal safety air quality monitoring device equipped with a visual and an audible alarm system offers several benefits for workers in a a wastewater treatment facility. Firstly, the visual and audible alarm systems can alert workers when air quality levels are unsafe, helping them to take immediate action to protect themselves.

For example, if the device detects high levels of dust, gas, or other pollutants, it can trigger an alarm to warn the worker to move to a safer location or put on additional protective equipment.

Secondly, the device can provide workers with real-time data on their personal exposure levels, helping them to monitor their own safety and avoid exposure to harmful pollutants.

Finally, the Scentroid PMD100 can help facility operators to identify areas where air quality may be a concern and take action to improve conditions. By providing workers with a tool that allows them to monitor their own safety and take action when necessary, facility operators can promote a culture of safety and improve overall worker health and wellbeing.

Product Name	Scentroid PMD100 Personal Monitoring Device
Maximum # of Sensors	2
Type of Sensors	2x EC, Temperature, Relative Humidity, Ambient Pressure
Sampling Rate	Continuous gas sampling, T & RH & P every 5 minutes
Weight	< 220 g
Size	6 x 7 x 3 cm
Screen Dimensions	24 x 47 mm
Communication	Bluetooth low energy
Power Requirement	Replaceable Lithium Battery
Typical Lifespan	1 working year
Ground Station	Included by Default
Cloud Server	SIMS3 - included by default
Alarm Equipped	Audio level 95 dB, Visual: LED RED strip surround
Haptic	Vibration feedback
Temperature Range	-20 °C to 55 °C
Relative Humidity	5 - 95%
Casing	IP54
Warranty	24 months full warranty to all parts including sensors
Sensor Replacement	Sensor dependent - first year covered by warranty
Back Clip	Mountable using mounting bracket/stand, alligator clip to
	connect to clothing
Features	SOS signal, administrator message broadcast and receipt,
	approximate localization within a facility (indoor and out-
	door), fall detection with user intervention for false positive



PORTABLE OLFACTOMETRY:

SM100i Intelligent Olfactometer

Our SM100i Intelligent Olfactometer draws a sample of ambient air via the Venturi pump and dilutes it using fresh, odourless air from a compressed air tank. The SM100i takes out all the guesswork from personal olfactometry because it automatically screens panellists and conducts a Yes/No test mode to determine accurate odour concentration and hedonic tones. Each SM100i requires no sample bags, no filters to change, and no pumps or other moving parts to maintain. An instrument you can rely on.

Scentroid's SM100i conducts a full odour analysis in accordance with the international EN13725 standard. The SM100i can analyze from a sample bag or be deployed in the field for direct olfactometry and ambient odor measurements. In addition to odor concentration (in OU) the SM100i (with the use of the wearable OdoTracker) can also automatically record Ammonia (NH3) and Hydrogen Sulphide (H2S) in real-time.

Product Name	Scentroid SM100i
Dillution Range	2 - 30,000 (2^15) Ou/m3
Dilution Principle	Stainless Steel Educator
Number of Steps	15 (adjustable range)
Air Supply Capacity	15 minutes
Pressure Flow Rate	20 liters per minute
Presentation Velocity	0.3
Tank Pressure	4500 PSI
Face Mask	Half face PTFE
Port	PTFE Sniffing Port
Wetted Material	Stainless Steel and PTFE
Battery	Rechargeable Lithium-ion with 36h Capacity per Charge
Communication	Bluetooth
Dimensions	15″ x 6″ x 6″
Weight	8 lbs
Power Requirements	None, battery operated

Other Scentroid Services



Consultation

Seek advice from our odour monitor experts and environmental consultants to help you improve the accuracy and reliability of your monitoring projects.



Perimeter Monitoring

We can assist with continuously monitoring the air quality around the boundary of your facility. This is typically used in settings where emissions and pollutants may potentially affect a community.



New Source Identification

ground level readings are used by SIMS3 to conduct back-trajectory to identify unknown sources. Continuous pollution data and field olfactometric data are used along with meteorological data to triangulate the exact location of an odor source.



Complaint Database

SIMS3 provides the user with the ability to collect, store, determine the correlation factor, and the justification of all complaints that may have been entered against your wastewater treatment facility.



Aerial Monitoring

Air quality mapping, model verification, and analysis of potentially dangerous sites have all now been made possible. While in flight, built-in chemical sensors can provide remote monitoring.



Odour Patrols

A team that's equipped with an SM100i Olfactometer, an OdoTracker personal ambient air monitoring device, a thermal camera, and a noise monitor patrols and collects facility data.



Software Solutions

Scentroid offers a complete and integrated suite for ambient air chemical analysis and odor management, known as SIMS3.Our software utilizes a unique and highly intuitive facility control system, and powerful artificial intelligence to assist you with daily tasks.



Provide Regular Reports

Scentroid is capable of providing you and your facility with several reports ranging from SIMS3 outputs, to odour testing results based on your facility's requirements. Several report types can be autogenerated using our SIMS3 platform.

Automated Reporting

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Our SIMS3 reporting auto-generated report module will generate visual reports at a user-defined frequency. Users will be able to schedule weekly, monthly, or annual reports. Once generated, reports will be sent to the user, and they can be downloaded within our reports module.

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Training

Scentroid provides worldwide training programs for our clients and distributors. Training can be conducted by Scentroid or your local distributor. Scentroid training tools include: online training, videos, brochure, operation manual and on-site workshops. We also offer a hands-on training program using our high-tech simulation room. Scentroid's state of the art simulation room is located at our headquarters in Toronto, Canada. You are more than welcome to visit us and meet with the people behind these products

Warranty

We are so confident of the reliability of our products, that we are glad to offer our clients a comprehensive 24 month warranty for your equipment. Additionally, warranties can be extended for the 3rd, 4th and 5th year. For more information about our extended warranties, speak to us today.

Technical Support

We are responsible for any products that exit from our manufacturing warehouse! Our support team offers different ways to help you. Choose the one most convenient for you below!



Local Support

We have developed a vast growing network of distributors and repair facilities. To find your local support please check our distributors map.

Phone Support

Our highly professional customer services are here to serve you, for any technical issue reach them easily via phone: 416.479.0078 – Ext 210



SME Support

Connecting you to the Subject Matter Experts! Our customer support is unique in that you can talk directly to the designer or programmer of each product.

Live Chat



If you feel more convenient to solve your technical issue via chat, No problem! Reach our highly professional customer services through our website-hosted Live Chat.

Email Support



For any technical issue you our engineers are happy to assist via email. For fast and efficient support, simply email our team at support@scentroid.com

Wastewater Treatment References

Peel Region Ontario, Canada

Developed an Odour Management Plan, Integration of SIMS3 for facility-wide monitoring, DR2000 utilized for ambient monitoring, SL50 perimeter established for continuous monitoring, Odour Dispersion modeling.

Haya Water Oman

Established an odour management training workshop, developed equipment for workshop, tested and trained regulators and administration, installed odour monitoring equipment, provided software modeling.

Metro Vancouver Vancouver, Canada

Development of odour regulation and field inspection protocols, provided training and on-site assessment for MV environmental engineers, Included 2 days of full training on odour measurement and monitoring.

Al Warsan WWTP Dubai

Provided odour sampling and olfactometric analysis, conducted odour emission inventory, dispersion modeling using SIMS, Installation and commissioning of Scentroid's complaint management systems, Installation of perimeter monitoring devices.

Marafiq WWTP Saudi Arabia

Conducted full plant audit, odour emission sampling and chemical plus olfactometric analysis, health and safety analysis, dispersion modelling and odor impact assessments, development of mitigation strategy, and installation and commissioning of monitoring devices and complaint management systems.

Chicago Wastewater Illinois, USA

Conducted an emission inventory check, provided identification of main odour sources, odour sampling, olfactometric analysis, reported on the odour emissions effecting local community, installed several perimeter monitoring devices

...Plus Many More! Visit our website www.scentroid.com







