Yorke
ENGINEERING, LLC
www.YorkeEngr.com

May 4, 2020

Ms. Jennifer Jodoin
Genflora, LLC
21710 Stevens Creek Boulevard, Suite 200
Cupertino, CA 95014
Phone: (408) 257-2100 x104
Fax: (408) 255-8620
E-mail: JJodoin@Genflora.com

Subject: CEQA Odor Analysis for Industrial Hemp Processing at 1020 CA-25, Gilroy, CA

Dear Ms. Jodoin:

Yorke Engineering, LLC (Yorke) is pleased to provide this Odor Analysis Report letter. This Odor Analysis includes a discussion of existing background odor environment, proposed odor environment, proposed facility odor mitigation, and an odor modeling assessment for the proposed facility. This evaluation is in support of an application for a Conditional Use Permit (CUP) for the proposed hemp processing facility, and is being prepared at the request of the County of Santa Clara (the County). The Odor Analysis was conducted to determine if any significant impacts are likely occur due to project implementation.

Simplified odor modeling was performed to determine an approximate dilution of odorous substances in worst-case weather for the purpose of quantifying the effect that distance will have on the mitigation of odors.

Although this document serves to show that there is substantial reason to believe that the proposed facility will not result in a significant impact of odors, if in the future it is determined that the facility results in significant nuisance odors, control measures may be required by the County.

PROJECT BACKGROUND

Genflora is modifying the existing land use permit for the Uesugi Farms property in Gilroy, CA. Uesugi Farms specialized in packing and storing a variety of produce, including Napa cabbage, bell peppers, strawberries, and chile peppers prior to shipping. The subject site is approximately 68 acres in size, consisting of mostly farmland and a produce distribution center along Highway 25, close to the City of Gilroy in the unincorporated area of the County. Surrounding uses are mostly agriculture-related operations. Southeast of the subject property is an existing composting operation.

Genflora plans to purchase the property for the immediate purpose of storing and processing industrial hemp. The industrial hemp will be trucked to the site from neighboring counties, such as San Benito County, Monterey County, and those in the Central Valley. Both dry and wet biomass will be processed, dried, packed, and stored on-site. A portion of the biomass stored on-site will be used for the extraction of cannabidiol (CBD) oil, the rest will be packaged and sold as flower. CBD oil and hemp flower will be sold wholesale and delivered to customers. No retail sales will be operated on-site under the proposed modifications.

Genflora recently submitted an application for a minor modification to the existing CUP to the County to allow a change in the type of agricultural commodity processed on-site and the installation of extraction equipment within an existing 8,500-square-foot packing building. As part of the review process, the County is requiring that Genflora provide documentation that the proposed modified use will not result in an odor nuisance.

LOCATION

The proposed facility is in a generally agricultural area, which is zoned agricultural. The zoning map can be seen in Attachment 1. There are a few residences spread throughout the area, as is allowed in the zoning code, the closest of which is approximately 450 feet northeast from property line to property line and 800 feet from the on-site processing buildings to residential property line. There is an industrial agricultural facility to the northeast, approximately 90 feet from property line to property line and 450 feet from the on-site processing building to the industrial facility's property line. There is a large composting facility to the southeast of the facility, approximately 1,300 feet from the on-site processing building to the composting facility boundary. These structures are shown in Figure 1.

On the property, there are three buildings that will be discussed throughout this document: two cold storage buildings and one active processing building, as shown in Figure 2.

Figure 1: GenFlora Boundary, Potential Receptors, and Composting Facility Locations

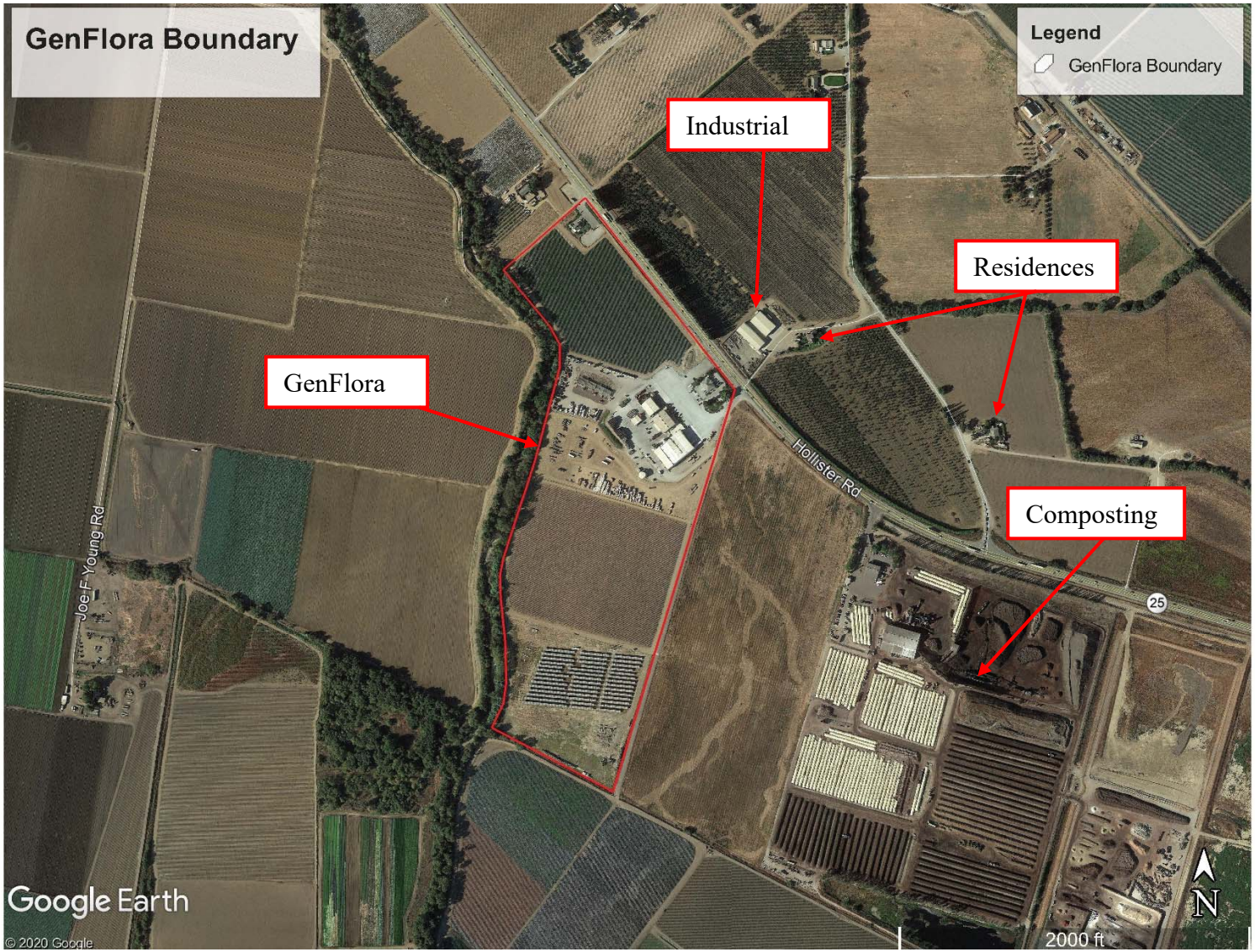


Figure 2: GenFlora Buildings of Interest

EXISTING ODOR ENVIRONMENT

Uesugi Farms used the facility to pack and store produce, including peppers. This operation has some associated odor from the produce itself, the packaging, the equipment, and any pesticides or chemicals associated with the process. The current land use permit allows for 10,000 square feet of outdoor produce storage (page 143 of the current land use permit; see Attachment 2).

The surrounding farmland also has associated odors, which are expected to be significant for any of the potential odor receptors. Odors from agriculture can include fertilizer, pesticides, and exhaust from farm equipment. The source of these odors is much closer to the potential receptors. The nearest industrial receptor and residential receptor share a property boundary with agricultural activities and their associated odors. These odors could potentially be significant simply because they occur so close to the potential receptors. The type of farm and practices at the farm could have a significant impact on the sources and types of odors present. The actual odor presence from agriculture is difficult to quantify, but associated odors are expected to be present.

The largest potential non-agricultural source of odor currently present in the immediate area is the composting facility. This facility collects green waste and municipal solid waste and composts the material received into fertilizer and other usable products. Part of this process is an outdoor sorting process. Composting is known to be a source of odor, since the decaying organic material releases volatile organic molecules into the air.

PROPOSED ODORS FROM PROJECT

The proposed project would replace the current produce packaging and storage with hemp processing and storage. Hemp is likely to have a stronger odor than produce. However, the proposed project would not alter either the agricultural activities nearby or the composting operation. As a result, only one part of the background odor sources will be altered. There are no exterior changes proposed to the facility, which will continue to operate during the allotted time from 6am-7pm Monday through Saturday and will not exceed 40 employees. GenFlora is also proposing to add odor mitigation.

Processing

Hemp processing will take place inside the existing central building on the property. This approximately 8,500-square-foot building is ventilated and will contain equipment to trim and package flower and equipment to extract CBD oil. This process may be more odorous than produce processing.

The CBD extraction systems proposed are built by Cool Clean Technologies (CCT) and employ carbon dioxide (CO_2) as an extraction solvent. Genflora plans to install one extraction device but may expand to multiple devices in the future. These systems are almost completely closed, with approximately 99% of the CO_2 being recycled through the process; however, at the end of the process the extraction chamber is evacuated and vented to the roof. The vented extraction chamber gas contains primarily with CO_2 with trace amounts of volatile organics, including terpenes, from the plant matter being processed. Because this release happens at the end of the process, nearly all of the soluble materials has already been extracted by the CO_2 solvent in contact with the plant matter during the process. Therefore, the quantity of organics present in the vent gas is expected to be only trace amounts. According to the vendor, this process emits at most 25 pounds of CO_2

gas, with trace organics, or 219 standard cubic feet of CO_2 at a time. This is a batch process expected to release four times per day per extraction machine. Small, brief batches of CO_2 with trace organics are not expected to cause significant odors.

Other potential odor sources from the extraction machine include preparation of the vessel chamber prior to starting each process cycle and any leakage through fittings. These would be released into the room in the area around the extraction machine. Preparation involves vacating the extraction vessel of headspace air and then filling the extraction vessel with CO_2, which is used as a solvent to extract the CBD oil. The headspace air that is pumped out of the extraction vessel is vented to the room. The headspace air may contain some volatile compounds from the hemp, but the extraction vessel is not heated or treated in any way that would concentrate odors. In addition, some extract may be lost through fitting and connection of the extraction machine, however these are expected to be very small because any fugitive loss would reduce the extraction level and therefore would be repaired immediately for optimal production. Details about the extraction system can be found in Attachment 3. As will be discussed more thoroughly in the next section, the processing building, including all activities in the processing building, will be abated.

Once the CBD oil is extracted, it will primarily be stored in closed containers. There are no proposed retail sales, so the CBD oil does not need to be repackaged into smaller units. This avoids additional exposure of the CBD oil to air, which will minimize odors.

The other processing operations, consisting of trimming (manual and by machine) and packing, are not expected to create any odors other than those naturally occurring from the hemp plants in contact with air. There are no heating elements or other processing devices that would concentrate odors. These processes will also be abated.

Odor Mitigation

The facility is proposing that FogCo install an odor mitigation fog device by the exhaust fans of the processing building that utilizes odor neutralizing material Odor Armor 420. This system aerosolizes water mixed with Odor Armor into a fog, which mixes with the ventilation air. The micro-sized droplets absorb the odor-causing organics, and the Odor Armor reacts with the organics to eliminate odorous substances. This system is expected to significantly reduce the odors associated with all activities that take place in the processing building, with the exception of the low organic extraction chamber ventilation, which is vented at the roof. The system specifications indicate that odors are reduced by 90%, and St. Croix Sensory certified the efficacy of a similar FogCo and Odor Armor system in 2017.

Details of the odor mitigation system, Odor Armor SDS, and St. Croix Sensory Certification can be found in Attachment 4.

Cold Storage

Although hemp processing may potentially be more odorous than produce processing, hemp storage may be less odorous than produce storage. This is because the proposed hemp facility will only store hemp indoors in cold storage, while the existing facility is permitted for 10,000 square feet of outdoor, unrefrigerated storage.

The cold storage buildings are 25,000-square-foot refrigerated systems with the capacity for 300 tons of inventory. To minimize energy expenditures, these buildings are as sealed as possible and minimize fugitive air leakage. The refrigeration system is a closed loop ammonia system with

ammonia recovery, which also has no odorous exhaust. As a result, the only odorous air that will be released will be incidental releases through open entryways. These entryways are either relatively small personnel doors or are designed to be quick closing and operated by automated sensors that can detect forklifts. These doors automatically close when not in use. Photos of the doors can be seen in Attachment 5. Additionally, reduced temperatures reduce the quantity of organics (and therefore odors) that volatilize from the plants into the air. Compared to outdoor storage, this should be a low-odor situation.

Material Movement

Hemp is delivered in semi-trucks through truck bays in the cold storage building, minimizing fugitive air emissions. It is then stored in 200-pound bins within the cold storage room and moved by forklift. The bins are taken by forklift to the processing building and are only outside briefly in transit to the processing building. After processing, the CBD oil is moved to the second cold storage building by hand or by forklift.

All CBD will be packaged onsite in sealed containers to maintain product freshness and will also minimize odors.

Proposed Odor Environment Summary

Cold storage of hemp should be considered operationally mitigated due to the minimal odorous air emissions. A majority of the processing operations will be mitigated by the FogCo installation. Additionally, the facility expects to use best practices like minimizing the time that hemp is outside in transit and keeping the product packaged and sealed. Between these measures, the odor impact of this operation, which is odor from the proposed project in excess of the existing environmental odors, is likely to be less than significant.

ENVIRONMENTAL CONSIDERATIONS

Meteorology

In any odor analysis, the predominant wind direction should be considered. The predominant wind direction is generally from the west-southwest. A majority of the time, the wind blows from the west-southwest, followed in frequency by west winds and then southwest winds. The wind rarely blows from the north, east, or south. This means that potential receptors in any direction west of the proposed facility are unlikely to experience frequent odors. Figure 3 shows a wind rose for Gilroy.

Distance always plays an important role in odor evaluations. Since the odors get diluted over distance, the further away a potential receptor is, the less likely they are to notice the odor. In this case, many of the potential receptors are relatively far from the primary odor source at the facility. To the south through east-southeast, there are no potential receptors for over 4,000 feet, excluding the composting facility.[1]

Between distance considerations and wind direction considerations, the potential impact of odors is primarily expected to be from north to east. In this direction, there are no more than five

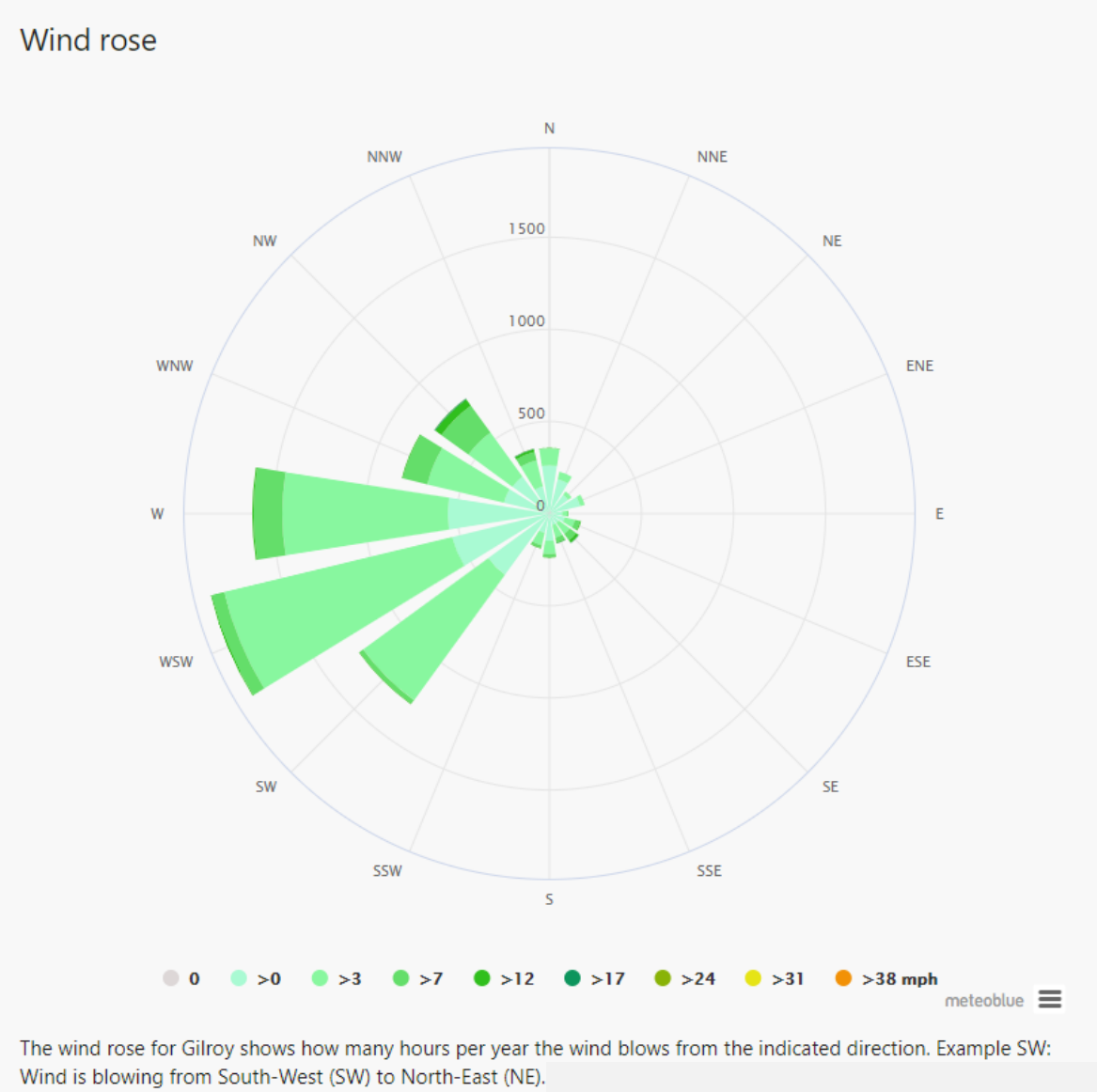
[1] We exclude the composting facility because the composting odors would likely mask any odors from hemp manufacturing, and it is very unlikely that the hemp processing would result in an appreciable increase in odors within the boundary of the composting facility.

residences and two agricultural compounds within 0.5 miles. The closest facilities are discussed in the Location section above.

Air Dispersion Modeling

To evaluate the downwind dilution of odorous compounds from the facility to the nearest potential receptors, screening level air dispersion modeling was performed. This modeling used very conservative and approximate methods to show that the nearest residence will, under atmospheric conditions where the highest odor impacts would be expected to occur, experience a 50% reduction in odors compared to odors immediately outside the processing building. The second closest residence will experience an odor reduction of 66% compared to the process building, and the reduction continue as distance from the building increases. Combined with the 90% odor reduction estimated from the FogCo installation, the nearest residence will experience approximately a 95% reduction in odor due to the proposed odor mitigation and distance from the proposed project. Attachment 6 presents the modeling results.

Figure 3: Gilroy Wind Rose



Source: https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/gilroy_united-states-of-america_5352214

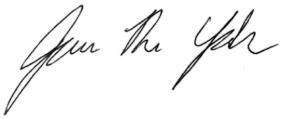
Environmental Considerations Conclusion

Odors from the processing building are expected to be mitigated by the FogCo installation, and the cold storage buildings are sealed so as to minimize leakage, thus providing significant odor mitigation. The effects of dilution and wind are expected to further mitigate the effect of any odors produced on the potential receptors. It is expected that the nearest residence will experience at least a 95% reduction compared to odors at the facility. It is likely the odor impact of this project will be less than significant.

CONCLUSION

It is our opinion that the facility, as proposed, should not cause a substantial impact on the odor environment above current baseline conditions. Unlike the current facility, the proposed operation has planned mitigation measures, including keeping products sealed, minimizing fugitive emissions from cold storage, minimizing the time that hemp is outside (including limiting storage to cold storage units), and installing the FogCo Odor Armor system. The result of this is that any increase in odors are effectively mitigated. There are also favorable effects from odor dilution due to distance from receptors and wind direction. Should you have any questions or concerns, please contact me at (949) 482-8528.

Sincerely,



James Yorke
Engineer
Yorke Engineering, LLC
JRYorke@YorkeEngr.com

cc: Greg Wolffe, Yorke Engineering, LLC
Shawn Miligan, Genflora, LLC

Enclosures:

1. Attachment 1 – Zoning Map
2. Attachment 2 – Land Use Permit (Outdoor Storage p. 143)
3. Attachment 3 – CCT Botanical Extraction Specifications
4. Attachment 4 – FogCo Odor Mitigation Equipment Specifications
5. Attachment 5 – Photos of Cold Storage Doors
6. Attachment 6 – Air Modeling Results

ATTACHMENT 1 – ZONING MAP

Santa Clara County Zoning Atlas

This atlas is intended to serve as a guide to the various zoning districts of the unincorporated areas of Santa Clara County. Because of the large area covered, and the scale of the map pages, the zoning designations have been somewhat simplified. Not all zoning designations have been labelled. Please check with the Planning Office for official zoning determinations.

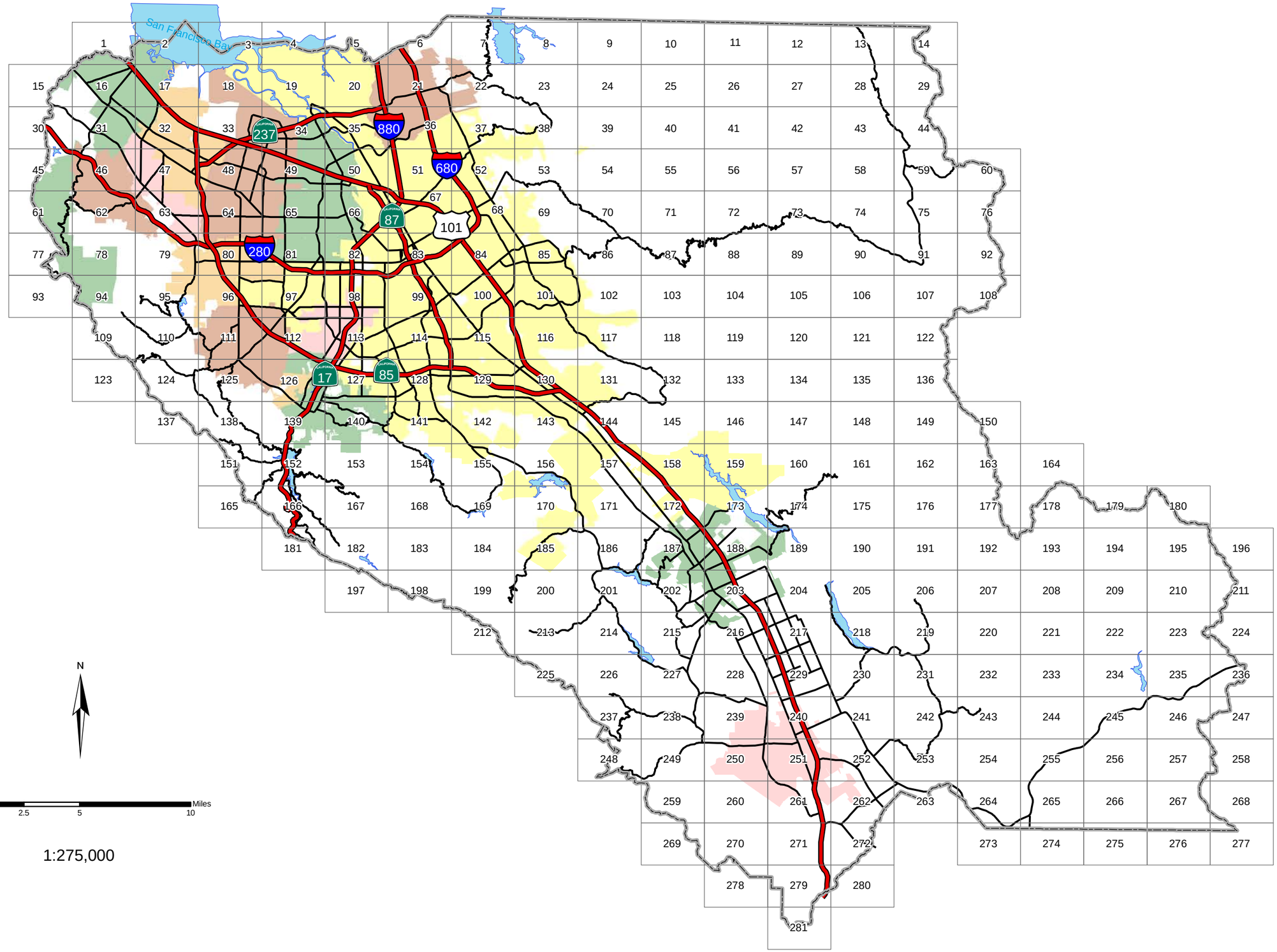
Legend

- County Boundary
- Urban Service Area
- Parcels
- Roads and Freeways
- Creeks
- Lakes

Zoning

- A
- A with Combining District
- A1
- A1 with Combining District
- AR
- AR with Combining District
- CG
- CG-20s
- CN
- HS
- HS with Combining District
- MH
- ML
- OA
- OSF
- OSF-sr
- R1
- R1 with Combining District
- R1E with Combining District
- R1S
- R1S-sr
- R2
- R2-8
- R3
- R3-3
- R3S
- R3S with Combining District
- RHS
- RHS with Combining District
- RR
- RR with Combining District
- RS
- RS-sr

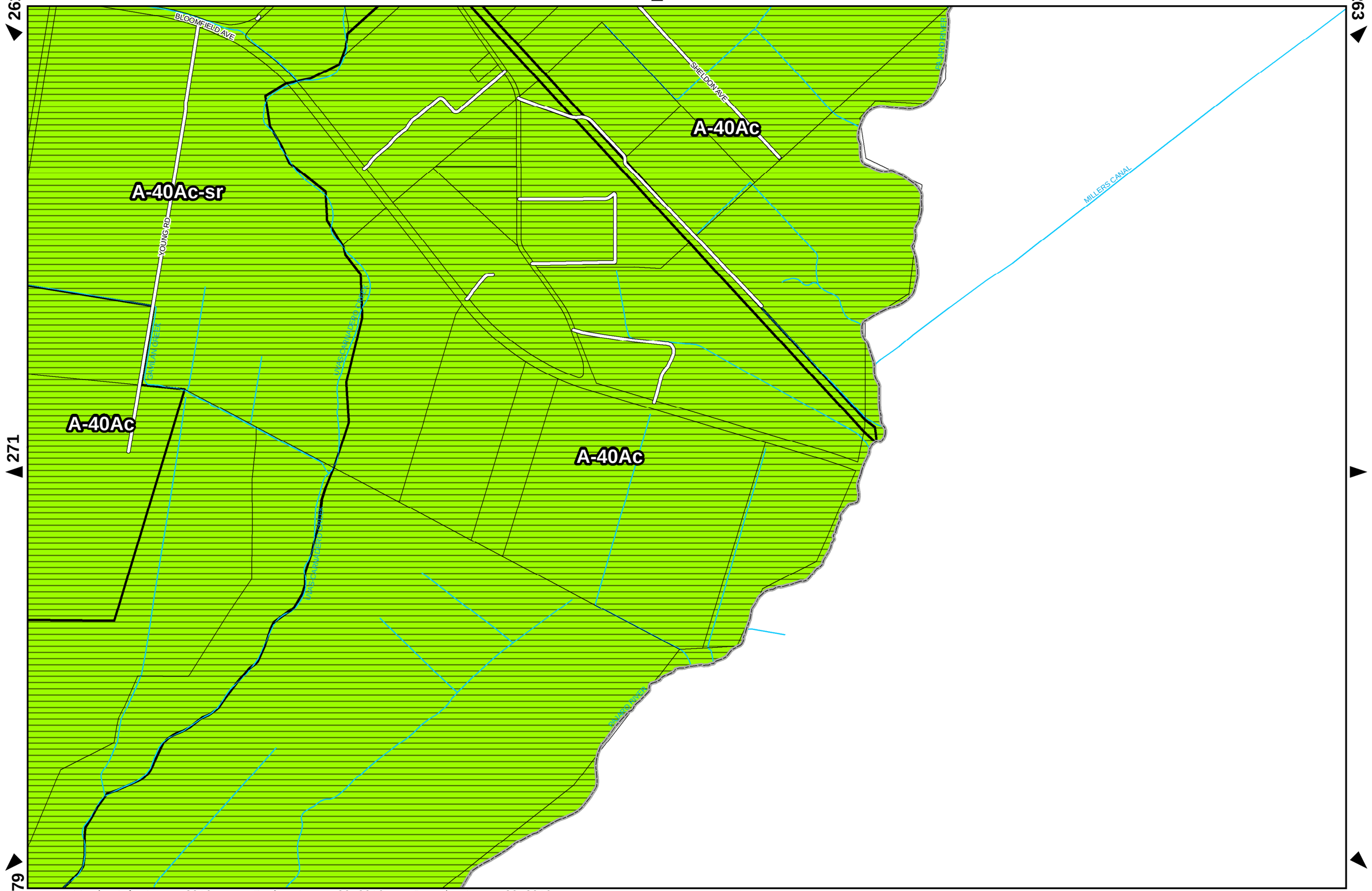
Current as of 08/29/2016



1:275,000

Version Info: August 2016 Zoning: August 29, 2016 Parcels: August 29, 2016
These maps are subject to revision. Please check with the Planning Office for official zoning determination.

Santa Clara County Zoning Atlas



Version Info: August 2016 Zoning: August 29, 2016 Parcels: August 29, 2016
These maps are subject to revision. Please check with the Planning Office for official zoning determination.

0 500 1,000
Feet

1:12,000

Santa Clara County Zoning Atlas

ATTACHMENT 2 – LAND USE PERMIT (OUTDOOR STORAGE P. 143)

3. Is the project part of a master plan, or a phase of a larger project? Yes [X] No [ ]

If yes, describe the project's situation/ role in the master plan or larger project (e.g., project is Phase 2 of 4, brief description of what each phase entails): _____

This office area was shown on the 2009 Use Permit, but not completed when the cooler was built. See answer at question 2, above, for more information.

4. Where on the site will project construction and activities occur (describe and show on site plan construction footprint and staging areas)? ___On already developed portion of site

_____

5. Site and project area information:

(a) Parcel size (acres or square feet): 68.53 Acres

(b) Describe all buildings (existing and proposed) associated with the proposed use:

BUILDING	SIZE (sq. ft)	HEIGHT
Existing Bldg. A- Office	3,328	22 '+-
Existing Bldg. B- Cooler	5,600	26'+-
Existing Bldg. C- Pressure Cooler	1,432	24'+-
Existing Bldg. D- Packing	8,500	26'+-
Existing Bldg. E- Refrigeration	1,240	21'+-
Existing Bldg. F- Electric	350	21'+-
Proposed Bldg G- 2-Story Office (1,500 s.f./floor)	**3,050+-**	**27' +-**
Existing Bldg. H- Cooler Storage	24,510	35' +-
Existing Bldg. J - Shipping Shed	117	14' +-
Existing Bldg. K- Fire Pump Bldg.	252+-	12'+-
Total	48,379	

(c) Indicate total area (sq. ft.) of parking areas: 22,945 (cars & line trucks)

(d) Number of on-site parking spaces: 73 existg. + 4 proposed = 77 total

(e) Indicate total area (sq. ft.) of buildings, driveways, patios, walkways and other impervious surfaces: 89,400

(f) Describe any other outdoor areas dedicated to activities of the proposed use (e.g. sales, storage, animal confinement, etc). Include land area (sq. feet or acres). _____

Yard Circulation: 122,900 s.f. Cooler Yard: 46,500 s.f
Truck Dock loading slabs: 11,656 s.f. Outdoor Storage: 10,000 s.f.

(g) Indicate total area (sq. feet or acres) of vacant or undeveloped land, and land not devoted to the proposed use: 61.13+- Acres

6. Will grading (cut and/or fill) be required as part of the project? Yes [ ] No [X]

If yes, a licensed civil engineer or land surveyor must complete the following information. If no, proceed to question 7.

ATTACHMENT 3 – CCT BOTANICAL EXTRATION SPECIFICATIONS

COOL® CLEAN TECHNOLOGIES

CO_2 Botanical Extraction System Machine Summary

January 2020

About us

Cool Clean Technologies, LLC is a recognized world leader in the design and manufacturing of CO_2-based technologies for a wide range of applications. Cool Clean Technologies, headquartered in Minneapolis US was founded in 2001, uses CO_2 in all phases for cleaning, surface preparation, machine tool cooling, and selective extraction.

Environmentally friendly and cost effective cleaning!

Who Is Cool Clean Technologies?

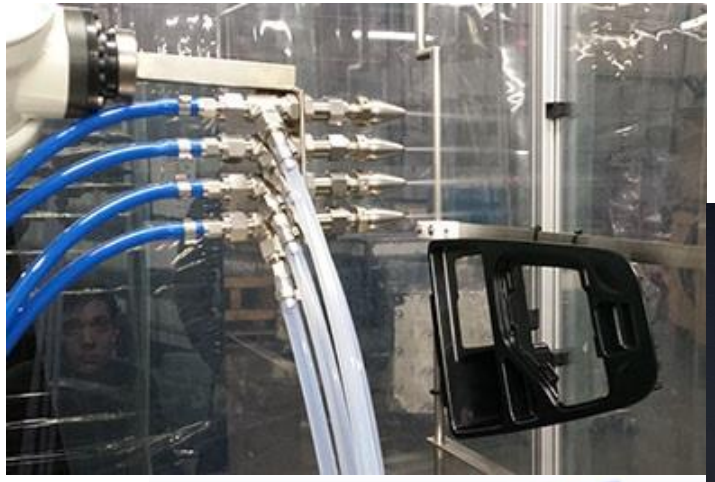
- A company that uses CO_2 in all phases:
  - Cleaning and surface preparation of precision surfaces;
  - Machine tool cooling for precision machining applications;
  - Selective extraction.
- Strong Proprietary Products - Patents and Know-How
- All of our processes have these important attributes:
  - Are effectively dry;
  - Generate Zero to trace byproducts;
  - No Touch spray cleaning;
  - Lower energy costs;
  - Environmentally friendly.

Main Application Areas

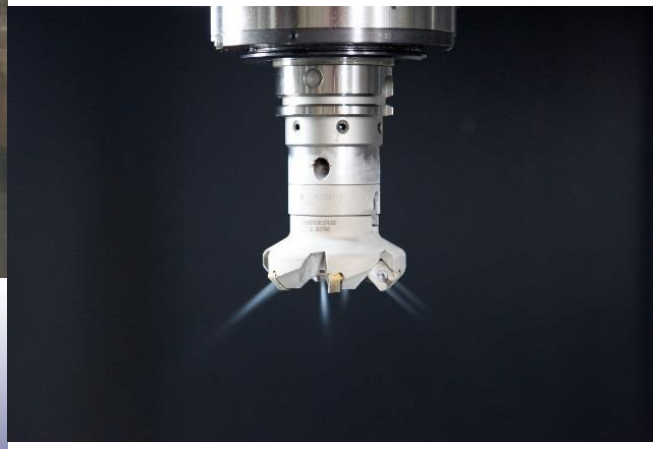
- CO2 Spray Cleaning:
  - Particle Removal
  - Surface Preparation
  - Residue Removal

- Machine Tool Cooling and Lubrication:
  - Dry Machining
  - Dry Drilling
  - CFRP Stack-Up Drilling
  - Plastics Deburring/Machining

- Selective Extraction:
  - Silicone Extraction
  - Aerospace Outgassing
  - Porous Metal Cleaning
  - Botanical Oil Extraction



CO2 Spray Cleaning



Machine Tool Cooling and Lubrication

Selective Extraction

Markets we serve:

The Cool Clean team has developed and markets a variety of CO_2 cleaning and cooling technologies, with installations worldwide.

Today, Cool Clean's CO_2 technology is used in many industries such as automotive paint pre-treatment, medical device manufacturing, aerospace, and electronics component manufacturing.


Automotive


Aerospace


Medical


Electronics/HDD

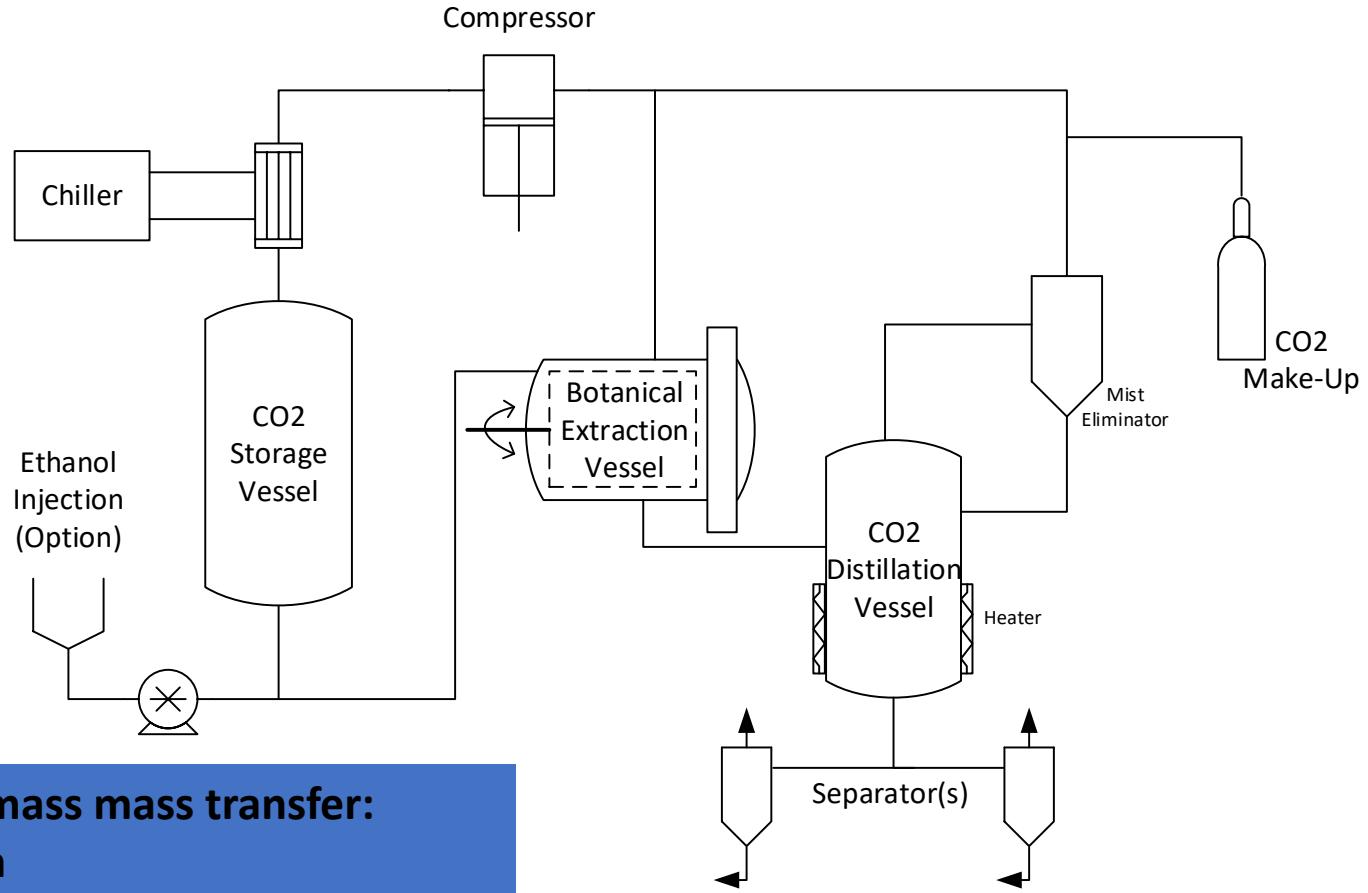

Optics & Display


CO_2 Extraction

CO2 Botanical Extraction System Background

- Developed from decades of CO2 cleaning and extraction manufacturing experience
- Evolved out of Hughes / Raytheon CO2 development in SoCal
- Key Applications:
  - SCCO2 extraction for aerospace materials
  - Commercial CO2 garment cleaning systems
  - Precision degreasing systems
  - Medical device cleaning
  - Extraction of biofuel components from biomass
  - Extraction of botanicals

Liquid CO2 Extraction System



CO2 to Biomass mass transfer:

- Diffusion
- Convection through biomass bags
- Agitation by rotating basket

A ‘Video’ of LCO2 Extraction

The ‘Process’

The ‘Product’

CCT LCO2 Extraction Scheme

- Solubilize THC/CBD.
- Minimize wax solubility and mobilization.
- Inhibit chlorophyll solubilization.
- Inhibit water solubilization.
- Extract with COLD CO2

Less Winterization
Less unwanted polar compounds
Less water

BETTER QUALITY OIL at the lowest production cost

CCT Cold CO2 Extraction™

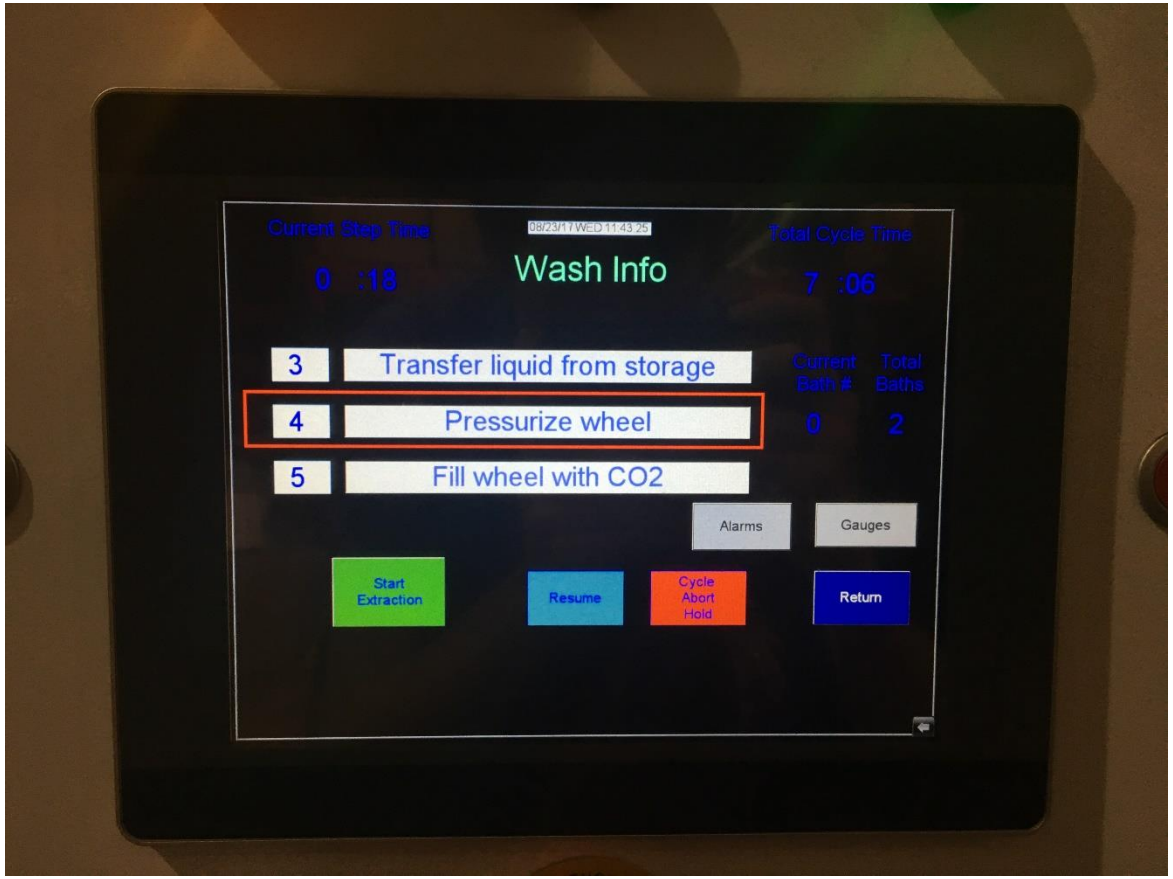
High Quality Crude Extract Directly out of Machine

Typical Operating Steps:

1. A mass of cannabis is placed in a processing bag. (Bags are designed to keep particles out of the system during the extraction process).
2. Bags are placed inside the basket of the extraction vessel (Multiple bags can be processed at a time).
3. Door is closed and sealed.
4. Extraction programs and parameters are selected via the HMI on front of system.
5. Start button pressed.
6. Extraction process runs automatically through the selected program.
7. At the end of the run, a buzzer is activated notifying the operator that the process is complete.
8. Extracted oil is delivered to the reservoir and automatically dispensed.
9. Pressure is relieved from the extraction vessel and the door can be opened. Bags of spent material are removed and disposed of (Note - Bags can be cleaned and refilled for additional use).
10. Ready for a new run.

Key features of Botanical Extraction Systems

- Easy operator interface
  - Simple loading/unloading
  - Automatic extract delivery
  - Push-button operation
  - Easy filter cleaning
  - Data logging of run info
- Large capacity extraction vessel volume
  - Ideal for low density botanicals
- Large CO2 throughput
- Effective CO2 Recycling
  - +99% of CO2 Processed is recycled



Key Elements of Effective CO2 Extraction System

- Effectiveness
  - Superior CO2/Botanical mixing
  - Consistency
  - Quality of extract
  - Extraction efficiency
- Process Reliability
- Verification of Extraction Process
  - Product quality, consistency
  - Monitoring of key operation variables
- Operation
  - Ease of loading / unloading
  - Cost of Extraction
  - Personal experience requirement
- Machines include full data logging capabilities of all process variables:
  - extraction pressure,
  - extraction time,
  - distillation temperature and pressure,
  - other process parameter desired.
- Maintenance
  - Cleanout between runs
  - Filter change-out
  - Machine maintenance and cost
- CCT Extractors built to ASME/UL compliance standards
  - All applicable pressure vessels meet ASME standards
  - All electric panels meet UL standards
- All machines subject to FDA requirements are required to satisfy the following requirements:
  - Installation Qualification (IQ) –
    - Machine manufacturing specifications, material, electrical, machine codes, etc.
  - Operational Qualification (OQ) –
    - Verifying that the machine and process is operating within specified operational parameters
    - Data collection, process diagnostics,
  - Performance Qualification (PQ) –
    - Verifies process under actual operating conditions, loads, conditions.
  - Has experience with FDA qualification process

Industrial Botanical Extraction Systems

BX-450

BX-610

BX-450
Industrial Botanical Extraction System

Parameter	Units	BX-450
Extraction vessel ID	in	32
	mm	813
Opening	inch	16
	mm	406
Basket Depth	inch	34
	mm	864
Basket Diameter	inch	28
	mm	813
Basket Volume	gallon	90
	liter	341
Extraction Vessel volume	gallon	120
	liter	454
Extraction Vessel MAWP	psig	765
	bar-g	53
Footprint: inch / mm	width	75 / 1905
	depth	106 / 2692
	height	105/ 2667

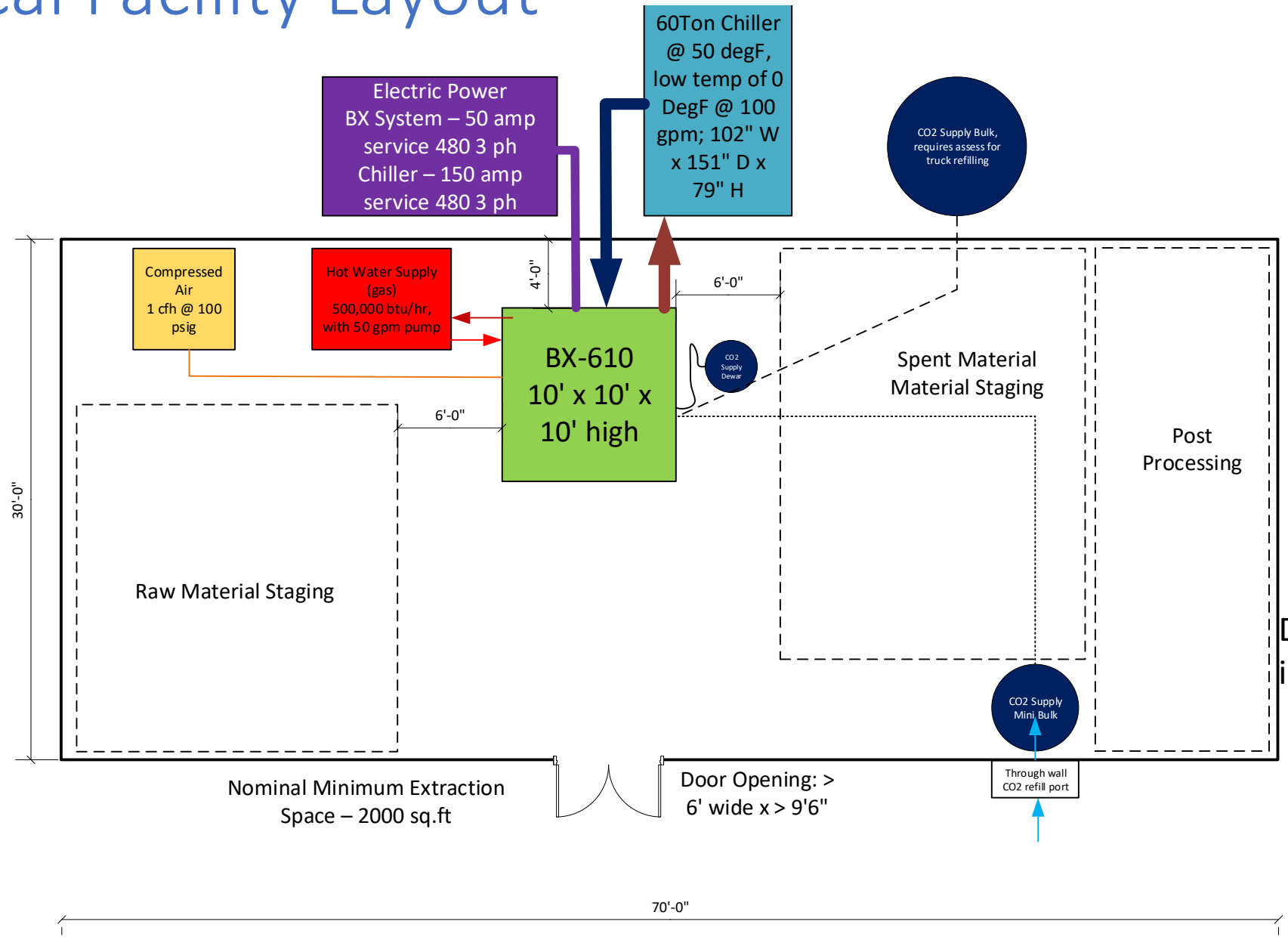
BX-610
Industrial Botanical Extraction System

Parameter	Units	BX-610
Extraction vessel ID	in	36
	mm	914
Opening	inch	19
	mm	483
Basket Depth	inch	30
	mm	762
Basket Diameter	inch	35
	mm	897
Basket Volume	gallon	127
	liter	481
Extraction Vessel volume	gallon	160
	liter	606
Extraction Vessel MAWP	psig	900
	bar-g	62
Footprint: inch / mm	width	100 / 2540
	depth	110 / 2794
	height	111/ 2819

Key Facilities Components

- Glycol Chiller
  - Provides cooling for CO2 condensation
  - Capacity dependent on desired operating temperature and production rate
  - Typical specification: 60 tons @ 50^{o}F (200 kW@ 10^{o}C); Temp setting: 0 - 20^{o}F (@ -18 – -6 ^{o}C)
- Heater/Boiler
  - Provides heat for CO2 distillation
  - Capacity dependent on production rate
  - Typical specification: 500,000 BTU/hr (146 kW)
- Compressed Air
  - Provides actuation for valves
  - Typical specification: 1 scfh @ 100 psig (0.5 slpm @ 7 bar-g)
- Electrical
  - Provides electrical energy for extraction system and facilities
  - Typical specification:
    - Botanical Extraction System: 50 amps, 3 phase, 480 VAC
    - Glycol Chiller: 125-150 amps, 3 phase, 80 VAC

Hypothetical Facility Layout



Dimensions in feet

Summary

- CBD extraction system demonstrated to be capable of processing large quantities of biomass.
- Process operations are completely automated:
  - Push button controls;
  - Automatic dispensing of extract.
- Processing of 200 – 800 lb/day (90 – 360 kg/day) of biomass possible.
- Two (2) industrial models available.

For Further Information . . .

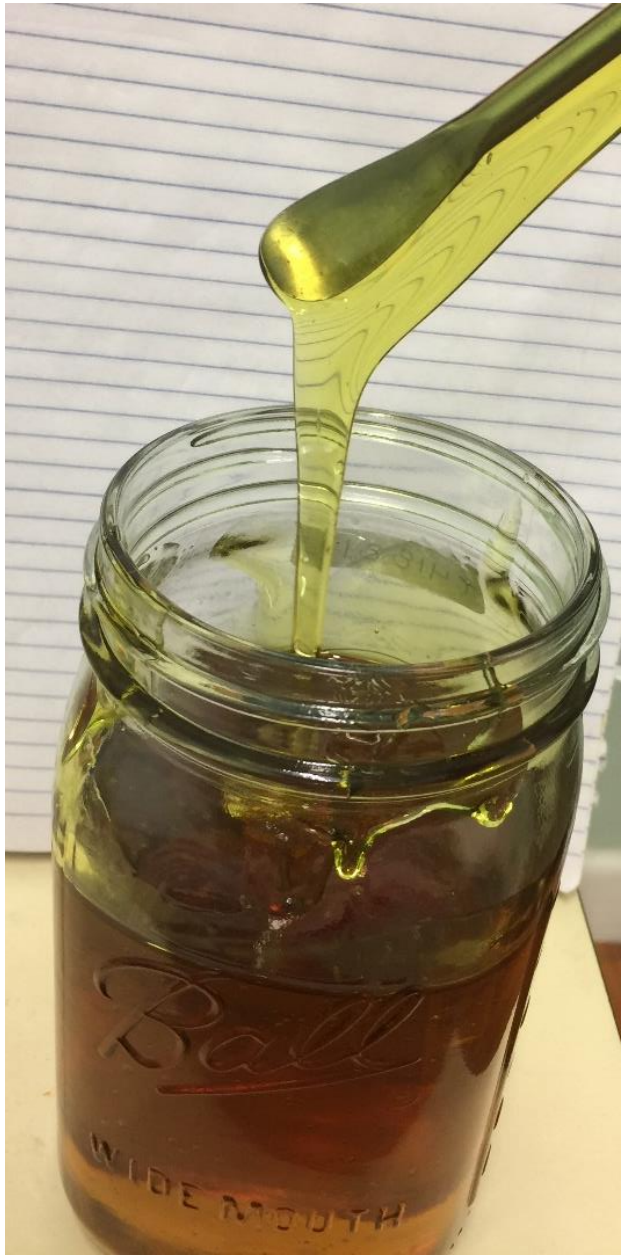
Nelson W. Sorbo, Ph.D.

Research and Development

nelson.sorbo@coolclean.com

310-508-4045 (mobile)

www.coolclean.com



ATTACHMENT 4 – FOGCO ODOR MITIGATION EQUIPMENT SPECIFICATIONS

CANNABIS
ODOR CONTROL

FOGCO

ODOR CONTROL
A HIGHER STANDARD

Fogco has over 25 years of experience in the high pressure fog industry and its systems are used worldwide to address and eliminate a variety of odor control concerns. Because this issue is highly regulated within the cannabis industry, it is critical to obtain the most effective odor solution available. Fogco delivers.

How and Why it works:

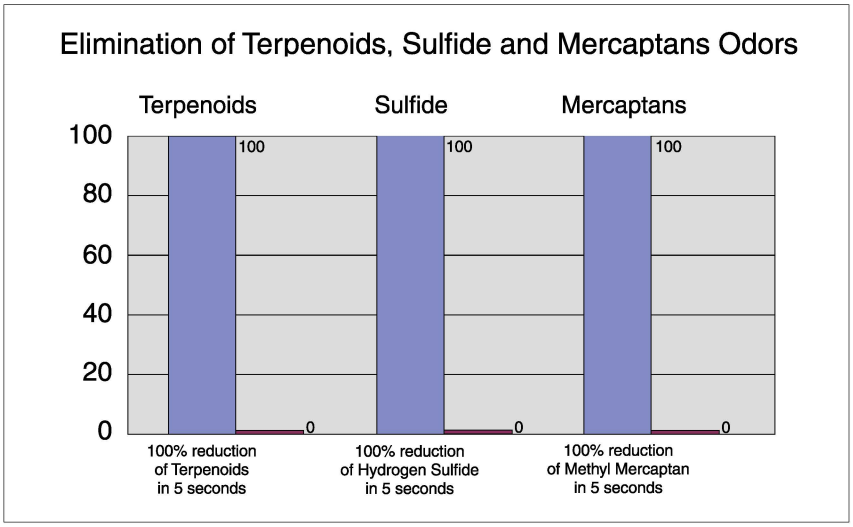
For effective open area odor control, two key elements are required: high pressure fog and a scientifically developed essential oil mixture that performs as a true odor neutralizer.

The high pressure fog is achieved through an atomizing process involving our high pressure fog pump and our specialty fogging nozzles. With this process, billions of micron sized droplets are produced every minute. For most cannabis operations, a nozzle ring is installed on the exterior of any vent or duct allowing the fog to mix with the exhausting air. As the droplets are suspended and carried into the air flow, they effectively encapsulate all airborne molecules.

Second, by injecting a specially formulated neutralizing solution into the high pressure fog, it is able to completely mix with the airborne odors. Through a series of chemical reactions (including antagonistic pairing, absorption and adsorption, and pluralistic effects), the essential oils are able to modify the chemical structure of the odor molecule which in turn, neutralizes and eliminates the malodor. This subtractive odor control™ process reduces odor intensity by over 90% compared to other vapor phase technologies that achieve up to 60%.

Benefits

- Licensing and application process approvals
- Neutralizes odors; eliminating complaints, violations, and fines.
- Cost effective
- Maximum coverage with minimum investment compared to alternatives.
- Non toxic and biodegradable with no contamination impact



*Independent research conducted by Benzaco Scientific.

Fogco Systems, Inc.
600 S 56th Street
Chandler, AZ 85226

T: +1 480 507 6478
E: info@fogco.com
W: www.fogco.com

FOGCO

St. Croix Sensory, Inc.

1150 Stillwater Boulevard North
Stillwater, MN 55082

1-800-879-9231
T: 651-439-0177
F: 651-439-1065

www.fivesenses.com

15 May 2017

Dana Pack
Fogco Systems, Inc.
600 S 56th St.
Chandler, AZ 85226

Re: Fogco-Benzaco Odor Management of Marijuana Grow Facility Air Emissions

On April 6, 2017, St. Croix Sensory evaluated the efficacy of a high-pressure, hose-and-nozzle, water fogging odor management system at CW Nevada medical marijuana grow facility in Pahrump, Nevada.

For more than 35 years, St. Croix Sensory staff has been assisting facility owners, consulting engineering firms, and regulatory agencies quantify odors from a variety of industrial, agricultural, and municipal operations, including wastewater treatment, landfills, composting, and manufacturing in both field and laboratory settings. St. Croix Sensory manufactures and markets state-of-the-art odor sampling and measurement equipment. Our "ODOR SCHOOL"® is an internationally recognized program to prepare inspectors to conduct field evaluations of ambient odors. We are dedicated to providing and maintaining the highest standard of quality for all laboratory services and manufactured products. St. Croix Sensory maintains a professional practice that continually reviews ASTM International, CEN (European), and ISO Methods. Our quality control practices ensure quality is met from receiving of materials and sample to the finished products and final reports delivered to our customers.

The purpose of this study was to evaluate the efficacy of an odor management system provided by Fogco Systems, Inc. (of Chandler, AZ) utilizing an odor counteractant specifically formulated for cannabis growing operations by Benzaco Scientific, Inc. (ODOR-ARMOR 420®). Three screened and trained assessors performed as an odor judge tribunal to evaluate at the fence line the untreated and treated air emissions from the grow facility. The evaluation protocol accommodated the guidelines of ASTM E1593 Standard Guide for Assessing the Efficacy of Air Care Products in Reducing the Perception of Indoor Malodor. The growing facility's almost continuous exhaust fans created the desirable "actual" conditions downwind at the facility fence line to be compliant with the ASTM 1593 scope for quantitative odor assessment in determining efficacy.

The odor tribunal unanimously agreed the treated air emissions with the Fogco System utilizing the Benzaco ODOR-ARMOR 420® odor counteractant product demonstrated "no discernible odor" at the fence line downwind of the facility continuous exhausts. Prior to the Fogco/Benzaco treatment, the ambient air at the fence line downwind of the CW Nevada facility presented as pungent, earthy, and marijuana-weed-like. The odor tribunal reported a consensus, "the marijuana odor disappeared when the fogging system was operating".

Downwind of the CW facility, from 1/8 to 1-mile on public access roadways, the ambient air was without a discernible odor. On the day of the evaluations, 4/6/2017, the weather conditions were dry (20% relative humidity), mostly sunny (60-deg F) with wind direction at the CW facility in Pahrump, NV was from the south at moderate wind speeds of 10-mph.

The Fogco System appeared to create a uniform evaporating fog-mist with no free-water droplets observed in the air, nor upon the immediate ground area. The Benzaco Scientific odor counteractant, when observed close to the immediate fog-mist, did not appear to have a strong, specific top-note fragrance, other than slightly floral and/or sweet.

The evaluation of the Fogco high-pressure fogging system, treating the exhaust air with Benzaco's ODOR-ARMOR 420® at the Pahrump, Nevada, CW Nevada marijuana grow facility demonstrated efficacy-effectiveness in treating the facilities air emissions, yielding "no discernible marijuana odor".

Respectively submitted,

Charles McGinley
Technical Director
St. Croix Sensory, Inc.

Benzaco Scientific
Engineered Dust and Odor Control

SAFETY DATA SHEET

1.0 IDENTIFICATION

GHS Product Identifier

Product Name	Odor-Armor 420®
Other Means of Identification	Not available
Product Type	Liquid
Recommended Use of the chemical	Cannabis Odor Counteractant (not meant for direct contact with food or plants)
Supplier Details	Benzaco Scientific, Inc. 5024 Garfield Street NW Washington, DC 20016
Emergency Telephone Information	888-413-5800

2.0 HAZARD INFORMATION

GHS Classification of the substance / mixture

Physical Hazards	Not classified.
Health Hazards	Not classified.
Environmental Hazards	Not classified.
OSHA Defined Hazards	Not classified.

OSHA Hazard Communication Standard

This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

GHS Label Elements

Hazard Symbol	None
Signal Word	None
Hazard Statement	This mixture does not meet the criteria for classification.

Precautionary Statement

Prevention	Observe good industrial hygiene practices.
Response	Wash hands after handling.
Storage	Store away from incompatible materials.
Disposal	Dispose of waste and residues in accordance with local authority requirements.

Hazards not otherwise classified (HNOC) None known.

Supplemental Information

Eye Contact	May cause irritation in sensitive individuals.
Skin Contact	May cause irritation in sensitive individuals.
Skin Absorption	Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Inhalation	At room temperature, exposure to vapor is minimal due to low volatility. Mist may cause irritation of upper respiratory tract (nose and throat).
Ingestion	May cause stomach distress or vomiting if ingested in great quantity.
Effects of Repeated Exposure	None known.

3.0 COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Common Name and Synonyms	CAS#	Weight %
Essential Oils	No information available	Mixture	1-50
Surfactant NP-9	No information available	Mixture	1-50
Poly (Oxy-1,2-Ethanediyl), Alpha-Hydro-Omega-Hydroxy	No information available	25322-68-3	.0079

*This product is non-toxic, non-corrosive, non-flammable and bio-degradable.

*The specific chemical identities of the ingredients in this mixture are considered to be trade secrets and are withheld in accordance with the provisions of 1910.1200 of the Code of Federal Regulations.

4.0 FIRST-AID MEASURES

First aid measures for different exposure routes

Eye Contact Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

Skin Contact Wash skin with soap and plenty of water.

Inhalation Not a normal route of exposure. If symptoms develop, move person to fresh air, if they persist, obtain medical attention.

Ingestion Do not induce vomiting. Rinse mouth with water and then drink one glass of water. Obtain medical attention immediately. Never give anything by mouth if victim is unconscious, is rapidly losing consciousness or is convulsing.

Most important symptoms/effects, acute and delayed

Long Term Effects None known.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to Physician No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5.0 FIRE-FIGHTING MEASURES

Extinguishing Media This product is non-flammable, however, treat for surrounding material.

Fire Fighting Procedures Non-flammable. This product is water based and water soluble.

Special Protective Equipment for Firefighters As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Hazardous Combustion Products Combustion products may include and are not limited to: Oxides of Carbon.

6.0 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Keep unnecessary and unprotected personnel from entering the area. Spilled material may cause a slipping hazard.

Methods and materials for containment and cleaning up

Before attempting to clean up, refer to hazard data within this document. Contain spilled material if possible.

Small spills	Absorb with non-reactive, non-flammable absorbent and place in suitable covered and properly labeled containers. Wash the spill site with large quantities of water.
Large spills	Prevent large spills from entering sewers or waterways. Contact emergency services and supplier for advice. For larger quantities, review Federal, State / Provincial and Local Governments prior to disposal. Product is highly biodegradable.
Environmental Precautions	Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

7.0 HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling	Safety glasses and gloves recommended.

Conditions for safe storage, including any incompatibilities

Technical measures / Storage conditions:	Keep out of reach of children. Store away from direct sunlight or ultraviolet light. Keep container tightly closed when not in use and store in a dry place away from incompatible materials, heat and sources of ignition.
Shelf life:	Use within 12 months.
Maximum Storage Temperature:	40 - 95 °F *****May get cloudy at higher temperatures.

8.0 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Biological Limit Values	No biological exposure limits noted for the ingredient(s).

Appropriate Engineering Controls

Ventilation	Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

Individual Protection Measures

Eye/Face Protection	Safety glasses should be sufficient for most operations; however, for misty operations wear chemical goggles. This product is non-toxic and non-corrosive.
Skin Protection	No precautions other than clean body-covering clothing should be needed.
Hand protection	Wear appropriate chemical resistant gloves when handling this material for prolonged or repeated contact. Consistent with general hygienic practice for any material, skin contact should be minimized. This product is non-toxic and non-corrosive.
Respiratory Protection	Not normally required if good ventilation is maintained.
Ingestion	Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

9.0 PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Color	Clear, Colorless, Opaque
Odor	Fragrant
Odor Threshold	No test data available
pH (100%)	6.5
Freezing Point	No test data available
Melting Point	No test data available
Boiling Point	>100 °C (212 °F)
Flash Point - Closed Cup	>200 °C
Evaporation Rate (H_2O = 1):	No test data available
Flammability Solid	Not flammable
Flammability Gas	Not flammable
Flammable Limits In Air Lower:	Not flammable
Upper	Not flammable
Vapor Pressure	No test data available
Vapor Density (air = 1)	No test data available
Specific Gravity (H2O = 1)	0.999
Solubility in Water (by weight)	100 %
Auto Ignition Temperature	No test data available
Decomposition Temperature	No test data available
Viscosity	Water thin
Pour Point	No test data available

10.0 STABILITY AND REACTIVITY

Stability/Instability	Stable under recommended storage conditions.
Conditions to Avoid	Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Avoid direct sunlight or ultraviolet sources.
Incompatible Materials	To avoid losing product integrity; mix this product only with water.
Hazardous Polymerization	Will not occur.
Thermal Decomposition	Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products may include but are not limited to oxides of carbon when heated to decomposition.

11.0 TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Ingestion	LD50, Rat 3,000 mg/kg.
Skin Absorption	May cause irritation in sensitive individuals.

Information on toxicological effects

Repeated Dose Toxicity	None known.
Chronic Toxicity and Carcinogenicity	No ingredients listed by IARC, ACGIH, NTP or OSHA.
Developmental Toxicity	No known significant effects or critical hazards.
Reproductive Toxicity	No known significant effects or critical hazards.
Genetic Toxicology	No known significant effects or critical hazards.

12.0 ECOLOGICAL INFORMATION

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components

Poly (Oxy-1,2-Ethanediyl), Alpha-Hydro-Omega-Hydroxy (CAS 25322-68-3)

Aquatic	Species	Test Results
Fish LC50	Atlantic Salmon (Salmo salar)	>1,000 mg/l, 96 hours

Persistence / degradability No data is available on the degradability of this product.
Bioaccumulative potential No data available.
Mobility in Soil No data available.
Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this product.

13.0 DISPOSAL CONSIDERATION

Waste Treatment

Waste disposal Methods DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

Contaminated Packaging Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted recycler, sending to an incinerator or other thermal destruction device.

14.0 TRANSPORT INFORMATION

DOT Non-Bulk NOT REGULATED
DOT Bulk NOT REGULATED
IMDG Non-Combustible Liquid. Not regulated as dangerous goods for transport under IMDG.
ICAO/IATA Non-Combustible Liquid. Not regulated as dangerous goods for transport under ICAO and IATA.

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15.0 REGULATORY INFORMATION

US Federal Regulations This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substance Control Act (TSCA) 12(b) Export Notification (40 CFR 707, Subpoint D)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)
Not listed.

SARA 304 Emergency Release Notification
Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not listed.

Superfund Amendments and Reauthorization Act of 1986 Title III (SARA)

Hazard Categories	Immediate Hazard	NO
	Delayed Hazard	NO
	Fire Hazard	NO
	Pressure Hazard	NO
	Reactivity Hazard	NO

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

SARA 302 Extremely hazardous substance
Not listed.
SARA 311/312 Hazardous Chemical
No
SARA 313 (TRI reporting)
Not regulated.

Other Federal Regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.
Clean Air Act (CAA) Section 112 (r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.
SARA 313 (TRI reporting)
Not regulated.
Safe Drinking Water Act (SDWA)
Not regulated.

US State Regulations

US California Controlled Substances. CA Dept of Justice California Health and Safety Code Section 11100
Not listed.
US Massachusetts RTK – Substance List
Not regulated.
US New Jersey Worker and Community Right-to-Know Act
Not listed.
US Pennsylvania Worker and Community Right-to-Know Law
Not listed.
US Rhode Island RTK
Not regulated.
US California Proposition 65
This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

Canadian Domestic Substance List (DSL)

All ingredients are register on the DSL.

Canadian WHMIS regulations

SDS prepared pursuant to Canadian WHMIS regulations (Controlled Products Regulations under the Hazardous Product Act).

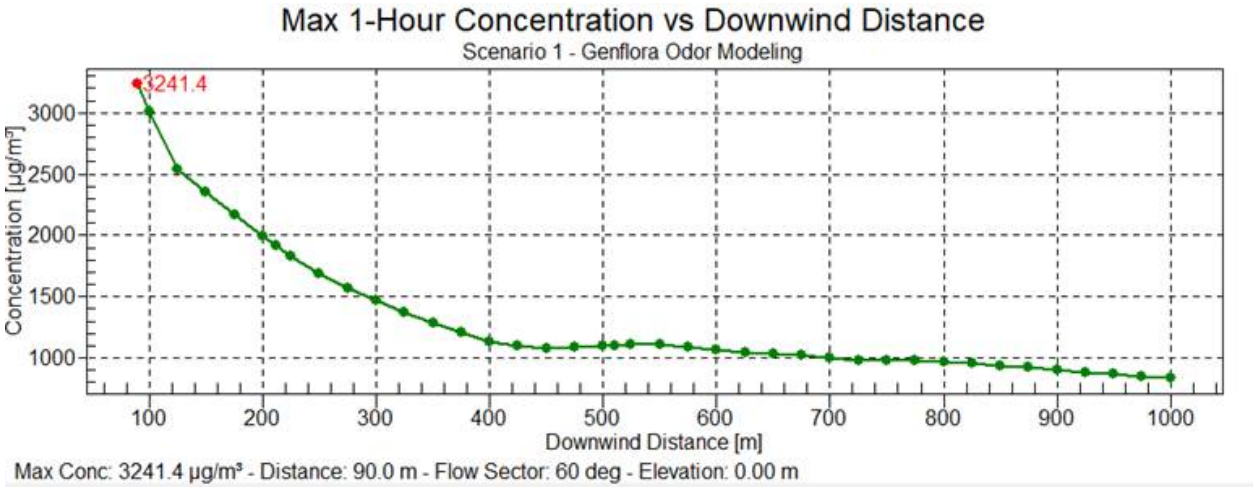
16.0 OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Date:	May 12, 2017	**SDS prepared by:**	Benzaco Scientific, Inc.
Revision:	May 12, 2017	**Telephone:**	888-413-5800

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

ATTACHMENT 5 – PHOTOS OF COLD STORAGE DOORS

ATTACHMENT 6 – AIR MODELING RESULTS



The concentrations shown on this chart are arbitrary. The initial concentration is unknown at this time. The concentrations seen above are based on an arbitrary emission rate (1 g/s) and serve to show the concentration decay over distance only, not the known concentrations. The source was modeled as a volume source based on the size of the building. This is a more conservative method than utilizing a point source. Additionally, these results show the concentration as a function of distance based on the worst-case meteorological conditions which are built in to AERSCREEN modeling software. This shows the 1hour maximum concentration.

AERSCREEN 16216 / AERMOD 19191 04/29/20

08:26:54

TITLE: SCENARIO 1

********** VOLUME PARAMETERS **********

SOURCE EMISSION RATE:	1.0000 g/s	7.937 lb/hr
VOLUME HEIGHT:	4.57 meters	15.00 feet
INITIAL LATERAL DIMENSION:	6.78 meters	22.23 feet
INITIAL VERTICAL DIMENSION:	1.70 meters	5.58 feet
STACK BASE LONGITUDE:	-121.5294 deg	630936. Easting
STACK BASE LATITUDE:	36.9526 deg	4090630. Northing
STACK BASE UTM ZONE:	10	
REFERENCE DATUM (NADA):	4	
STACK BASE ELEVATION:	44.71 meters	146.69 feet
RURAL OR URBAN:	RURAL	

DIGITAL ELEVATION MAP(S) "monterey-w.dem"

INITIAL PROBE DISTANCE = 1000. meters 3281. feet

********** BUILDING DOWNWASH PARAMETERS **********

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

********** FLOW SECTOR ANALYSIS **********

25 meter receptor spacing: 90. meters - 1000. meters

MAXIMUM IMPACT RECEPTOR

FLOW SECTOR	1-HR CONC (ug/m3)	DIST (m)	HEIGHT (m)	TEMPORAL PERIOD
10	3241.	90.0	0.26	ANN
20	3241.	90.0	0.29	ANN
30	3241.	90.0	0.29	ANN
40	3241.	90.0	0.24	ANN
50	3241.	90.0	0.14	ANN
60*	3241.	90.0	0.00	ANN
70	3184.	90.0	-0.17	ANN
80	3124.	90.0	-0.35	ANN
90	3068.	90.0	-0.52	ANN
100	3024.	90.0	-0.66	ANN
110	3036.	90.0	-0.62	ANN
120	3052.	90.0	-0.57	ANN
130	3065.	90.0	-0.53	ANN
140	3072.	90.0	-0.51	ANN
150	3075.	90.0	-0.50	ANN
160	3078.	90.0	-0.49	ANN
170	3072.	90.0	-0.51	ANN
180	3056.	90.0	-0.56	ANN
190	3046.	90.0	-0.59	ANN
200	3036.	90.0	-0.62	ANN
210	3024.	90.0	-0.66	ANN

220	2995.	90.0	-0.75	ANN
230	2953.	90.0	-0.89	ANN
240	2917.	90.0	-1.01	ANN
250	2891.	90.0	-1.10	ANN
260	2875.	90.0	-1.16	ANN
270	2845.	90.0	-1.27	ANN
280	2824.	90.0	-1.35	ANN
290	2808.	90.0	-1.41	ANN
300	2791.	90.0	-1.48	ANN
310	2774.	90.0	-1.55	ANN
320	2753.	90.0	-1.64	ANN
330	2816.	90.0	-1.38	ANN
340	2923.	90.0	-0.99	ANN
350	3049.	90.0	-0.58	ANN
360	3188.	90.0	-0.16	ANN

* = worst case flow sector

********** MAKEMET METEOROLOGY PARAMETERS **********

MIN/MAX TEMPERATURE: 250.0 / 310.0 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: USER ENTERED

ALBEDO: 0.28

BOWEN RATIO: 0.75

ROUGHNESS LENGTH: 0.072 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR

-- -- -- --- --

10 02 12 12 01

H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS

- -

-0.60 0.057 -9.000 0.020 -999. 31. 23.4 0.072 0.75 0.28 1.00

HT REF TA HT

- - - - - - - - - - -

10.0 250.0 2.0

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR MO DY JDY HR

-- -- -- --- --

10 02 12 12 01