EXHIBIT J

F R+A

Forensic Research + Analysis

January 27, 2021

J Gary Gwilliam
1999 Harrison St. Suite 1600
Oakland, California 94612

RE: *Bauer v City of Pleasanton; Bradlee Middleton; Jonathan Chin; Richard Trovao; Steven Bennett; Alex Koumiss; Jason Knight; Marty Billdt; David Spiller; and Does 1-50*

Decedent: Jacob Bauer
Date of Death: August 1, 2018 (38 years old)
Date of Birth: June 27, 1980

Dear Mr. Gwilliam,

I am in receipt of your correspondence regarding the above-named individual and the circumstances of his death. In addition to my review of these materials, I have performed an extensive literature review and research on the validity and reliability of methamphetamine intoxication as a cause of death at the levels identified in Mr. Bauer, when other competing causes (*i.e.* compressive or positional asphyxia, TASER shocks) are present as well.

The purpose of this report is to provide my analysis regarding the various potential causes of cardiopulmonary arrest acting on Mr. Bauer at the time that he became unresponsive, and which of the potential causes were the most probable cause (or causes) of his death. The medical examiner who performed an autopsy on Mr. Bauer, Dr. Michael Ferenc (forensic pathology), concluded that the manner of Mr. Bauer's death was an accident, which he attributed to acute methamphetamine toxicity despite a low level of the drug that was identified in Mr. Bauer's blood. Dr. Ferenc also other noted conditions present at the time of Mr. Bauer's death, including probable mechanical asphyxia while he was placed in restraint by police, cardiac hypertrophy, and morbid obesity.

In this report I will demonstrate Dr. Ferenc's conclusion that Mr. Bauer's death was attributable primarily to the toxic effects of methamphetamine is not only speculative and unsupported by any scientifically valid evidence, but demonstrably incorrect.

Further, I will demonstrate that there is abundant evidence that Mr. Bauer's death instead most probably resulted from the use of force by Pleasanton law enforcement personnel. The most

probable mechanism causing Mr. Bauer's death was cardiopulmonary arrest triggered by restraint-related asphyxia. There are no alternative explanations for his death that are unrelated to the actions of the City of Pleasanton police personnel that are more than slightly probable.

My methods and opinions in this case pertain to the fields of forensic medicine and epidemiology. Forensic medicine refers to the intersection of medicine and law, and in particular medicolegal investigation of causation. Epidemiology is defined as the scientific study of the cause of disease, injury, and death in populations, including prevalence, risk, and incidence in specific populations. The scientific field that dictates how probabilities may be inferred from epidemiologic data and methods and how the inferences can be used to assess the cause of injury, disease, or death in individuals in a legal setting is forensic epidemiology. Forensic epidemiology provides the scientific basis for the evaluation of specific causation, to the extent that probability or likelihood of causation may be evaluated. The methods applied in this report are consistent with those outlined in the Reference Guide on Epidemiology, from the Reference Manual on Scientific Evidence, published by the Federal Judicial Center and the National Academies of Science (3rd Edition, 2011), as well as in the text Forensic Epidemiology: Principles and Practice, published by Elsevier (2016).

My qualifications to provide opinions concerning the matters herein are as follows:

I am a medicolegal consultant, with expertise in the fields of forensic medicine and forensic epidemiology. I hold the following relevant academic degrees: a doctor of medicine degree (Med.Dr.) from Umeå University (Sweden), a doctor of philosophy (Ph.D.) in public health with a major focus in epidemiology from Oregon State University, and a master of public health (MPH) in epidemiology and biostatistics, also from Oregon State University, a master's degree in forensic medical sciences (MScFMS) with the Academy of Forensic Medical Sciences (UK), and a Diploma of Legal Medicine (DLM) with the Faculty of Forensic and Legal Medicine of the Royal College of Physicians (UK). I have completed a 2-year post-doctoral fellowship in forensic pathology at Umeå University in Sweden, am an affiliate medical examiner with the Allegheny County Medical Examiner's office, a fellow of the Pathology section of the American Academy of Forensic Sciences (AAFS) and the American College of Epidemiology (ACE), and the vice-chair of the standards board for medicolegal death investigation for the AAFS. I am the chair of the subcommittee for research at the Faculty of Forensic and Legal Medicine of the Royal College of Physician (UK). I am a US Fulbright fellow, having held a 3-year appointment as a Fulbright Specialist in the field of Forensic Medicine with the U.S. Department of State (2017-20).

I serve as a tenured Associate Professor of Forensic Medicine at Maastricht University, and a Joint Clinical Professor of Psychiatry and Public Health and Preventive Medicine at Oregon Health and Science University School of Medicine, where I have taught courses for the past 20 years in forensic medicine, forensic epidemiology, and medical causation. I have also held an appointment as an

Adjunct Professor of Forensic Medicine and Epidemiology at the Institute of Forensic Medicine, Faculty of Health Sciences, Aarhus University, Aarhus, Denmark from 2005-2017.

I serve or have served as an associate editor or editorial board member of 14 scientific peer-reviewed journals and have published approximately 220 scientific papers, abstracts, book chapters and books, including the recent text for Elsevier, Forensic Epidemiology: Principles and Practice (2016). My scientific publications have been cited by other authors of peer-reviewed publications approximately 2,800 times. Specific to the facts of the present investigation, I have an extensive education, practical investigational experience, and research background into restraint-related related death. Please see my CV for further details.

I have provided testimony in more than 350 civil and criminal trials in state and Federal courts throughout the United States, Canada, Australia, and Europe.

Background Facts;

Rose and John Bauer were concerned that their adult son Jacob (age 38) who lived with them was experiencing a mental crisis in late July of 2018. They contacted the City of Pleasanton Police department at least 4 times, in the hopes that their son would be committed for mental health treatment. As Mr. Bauer was not posing a threat to himself or others, the police informed Mr. and Mrs. Bauer that they could not have Mr. Bauer committed.

Days after Mr. Bauer's parents' most recent contact with the police, on August 1, 2018, Pleasanton Police Dispatch received a call of a disturbance at Raley's supermarket, located at 5420 Sunol Blvd, Pleasanton, California at 14:42.[1] The manager of the supermarket reportedly told dispatch that a man was exhibiting "deranged" behavior, drinking beverages without paying for them, and eventually picking up and slamming down a shopping cart, and grabbing liquor bottles.[2]

Officers Bradlee Middleton and Jonathan Chin responded to the call, arriving on scene around 14:51. An employee of Raley's supermarket identified Jacob Bauer, who had walked away from the supermarket and was down the street, as the man who had been vandalizing the store and behaving bizarrely, adding that Mr. Bauer appeared to be either mentally ill or on drugs.

Note: the following narrative of events is based on the body camera footage from officers Middleton, Bennett, Lengel, Travao, Knight, and Sergeant Sansura, as well as the bystander footage taken from across the street.

Officers Middleton and Chin approached Mr. Bauer, asking him if he was responsible for the reported vandalism, which he denied.[3] Mr. Bauer was cooperative and calm. Officer Middleton asked Mr. Bauer if he had identification, which Mr. Bauer said he had left at home. Officer Middleton used his radio to call dispatch with Mr. Bauer's details, and dispatch responded that "*Your suspect is clear and valid*."[4]

Officer Middleton asked whether Mr. Bauer had anything illegal on him, but Mr. Bauer did not appear to hear him, instead looking out across the street, away from the officers. Without warning, Officers Middleton and Chin approached Mr. Bauer, grabbing at his hands, and told him that he was being detained until they "*figure out what's going on*."

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[1] PPD 1-231 Investigation Reports, page 4
[2] CONF PPD 1159-1427 - Administrative review of incident 18-30256, page 7
[3] Middleton video, PPD 370, timestamp T21:53:00Z
[4] Middleton video, PPD 370, timestamp T21:55:46Z

Mr. Bauer resisted the attempted restraint, asking if he was "*Free to go*," to which the Officer Middleton responded that he was not. The officers managed to handcuff one of his wrists. Mr. Bauer continued to resist the restraint, asking "*What are you doing?*" and Officer Middleton threatened that if he did not comply, he would be tased. In the next available footage, Mr. Bauer was on the ground, rolling back and forth to keep his hands away from the officers, to avoid being handcuffed.

Officer Middleton deployed his TASER on Mr. Bauer for 6 seconds, which made good contact with the left side of Mr. Bauer's torso, but the shock did not appear to affect his ability to resist. Officer Middleton then put his TASER against Mr. Bauer's skin and used it as a drive stun, deploying the shock cycle for 3 consecutive 5-second cycles.[5] Although it did not have the desired effect of incapacitating him, Mr. Bauer was tased for 21 seconds in a 30 second interval.

Officers Steven Bennet, Alex Kourmiss, and Richard Travao arrived on scene, and Officer Bennet restrained Mr. Bauer's legs.

Officers Travao, Kourmiss, Middleton, and Chin pinned Mr. Bauer to the ground, as Officer Bennet stood watching. Officer Chin used his torso to hold Mr. Bauer's back and pelvis to the ground, with his arms under his prone body.

Officer Trovao used his baton to strike Mr. Bauer twice on his left torso. He then used his TASER to drive stun Mr. Bauer for 5 seconds, and again for 5 seconds immediately afterward.[6]

Sergeants Jason Knight, Marty Billdt, and Officer Lashley arrived on scene. Officer Chin punched Mr. Bauer two times on his back. Officers Lengel and Granados arrived on scene.

Mr. Bauer was successfully handcuffed, requiring the use of multiple pairs of handcuffs.[7] After he was handcuffed, 5 officers continued to use parts of their bodyweight to keep Mr. Bauer from moving while he was prone.

[5] Pleasanton Police Department - 1159-1427 - Administrative Review of incident, page 14.
[6] Pleasanton Police Department - 1159-1427 - Administrative Review of incident, page 18
[7] Bennet video, PPD 368, timestamp T22:01:15Z

Sergeant Sansura arrived on scene. Officers Lengel and Lashley unpacked a WRAP device, which binds the legs, and keeps the restrained individual at a 90-degree angle via a harness across the back. With the aid of Officer Koumiss, began to apply the leg restraint of the device to Mr. Bauer's legs. Mr. Bauer continued to resist arrest and scream.

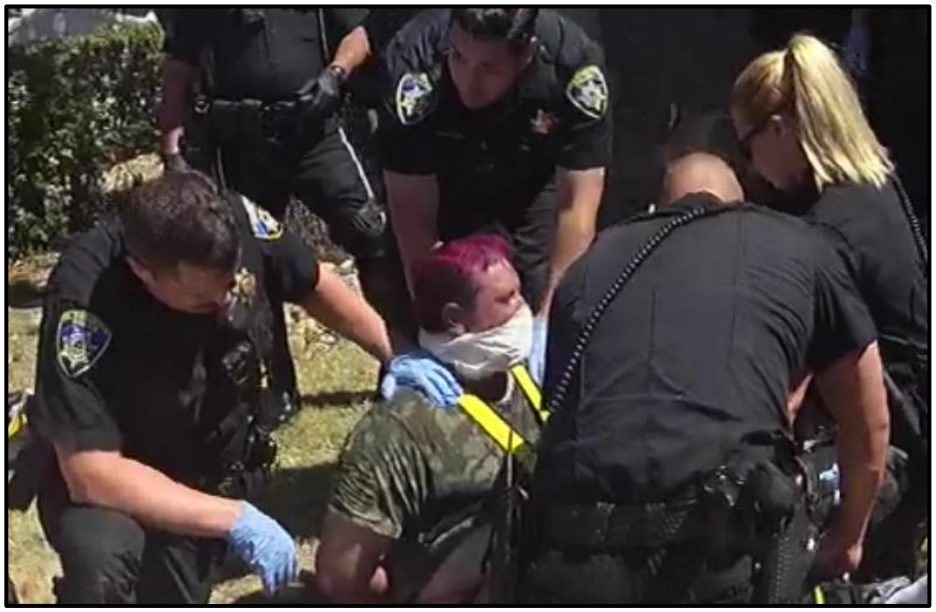
Officers Socha and Palmquist arrived on scene. At least thirteen officers were on scene at this point. Commenting on the disproportionate number of police officers on scene, a bystander filming the scene commented, "*Fifty cops, one guy*."[8]

The image below is from Sergeant Sansura's body camera.[9] In the photo, there are at least 6 officers using their hands and/or knees to pin Mr. Bauer to the ground, after he has already been handcuffed, and before the WRAP device has been applied.

[8] Bystander video, PPD 382, timestamp 1:35
[9] Sansura video, PPD 396, timestamp T22:03:34Z

Mr. Bauer was rolled over onto his back so the WRAP device could be placed. A mask was applied to Mr. Bauer, including a spit guard. He repeatedly yelled out "*Mama kill me*."[10] He continued to scream and attempt to escape the restraints, and told the officers that he couldn't breathe. He asked the officers, "*Please take off my mask*."[11]

In the image below is a view from Officer Lengel's body camera.[12] There is netting over Mr. Bauer's entire head, as well as a spit guard which is covering his mouth, jaw, and neck. His legs are bound, and the yellow straps across his chest were tied to his leg restraint to keep him at a 90-degree angle.

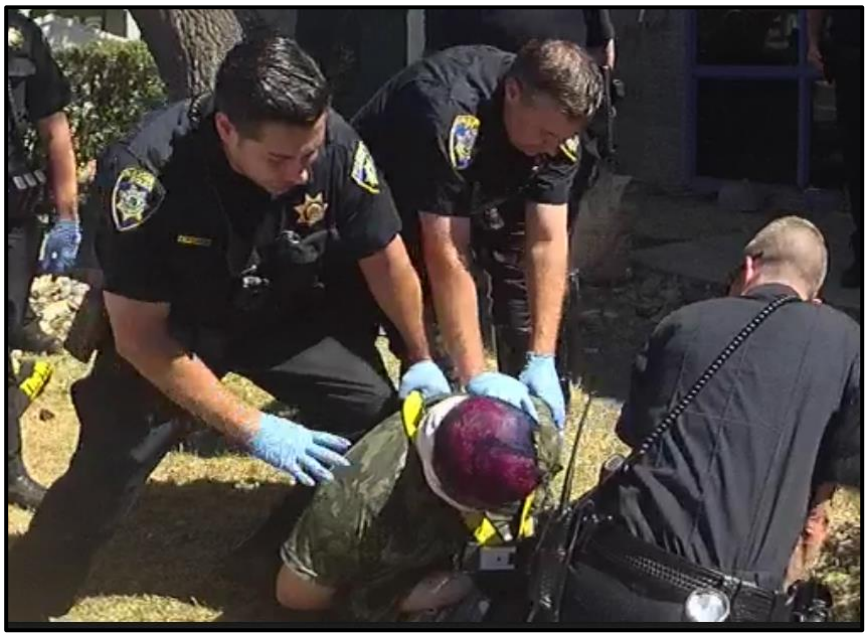


After the WRAP was fastened and Mr. Bauer was seated in an upright position, handcuffed, and completely bound, an officer continued to hold Mr. Bauer's legs down by kneeling on them. Two officers (one was Sergeant Sansura) were holding Mr. Bauer's shoulders down. Mr. Bauer's breathing became shallower, his movements lethargic, **and his face began to turn blue**. See the image below from Sergeant Sansura's body camera, over Mr. Bauer's left shoulder.[13]

[10] Bennett video, PPD 368, timestamp T22:06:49Z
[11] Sansura video, PPD 396, timestamp T22:12:49Z
[12] Lengel video, PPD 402, timestamp T22:11:38Z
[13] Sansura video, PPD 396, timestamp T22:15:16Z

The officer holding Mr. Bauer's right shoulder placed a knee on his back, and leaned part of his bodyweight on him, in addition to pressing his shoulders down with his hands, forcing Mr. Bauer's torso into a less than 90-degree angle. This position was maintained for at least 5 minutes. See image below.[14]

[14] Lengel video, PPD 402, timestamp T22:18:35Z



During this time (and after his face appeared blue) Mr. Bauer became unresponsive. Small jerking movements of his head are apparent, but did not appear to be resisting, and was not responding to officers' questions. As multiple officers continued to apply force to him it is not possible to discern which movements were from Mr. Bauer (and whether they were involuntary) and which were induced by the multiple law enforcement personnel who were in physical contact with him.

An ambulance arrived on scene at 15:15. Mr. Bauer was not medically evaluated, but rather was first given a 4 mg dose of the sedative midazolam intramuscularly, at approximately 8.5 minutes after the paramedics arrived on scene.[15,16] A paramedic told Officer Granados that the WRAP device and handcuffs were preventing her from being able to access Mr. Bauer's airway to ensure he was able to breathe.

After the injection Mr. Bauer's vital signs had still not been evaluated by the paramedics. Nearly 9 minutes after the ambulance arrived, one paramedic noted that Mr. Bauer's face looked "*purple*," to which Officer Lengel responded "*No, it's his hair*."

Multiple officers and paramedics loaded Mr. Bauer onto a gurney 12 minutes after the ambulance arrived. One paramedic noted that Mr. Bauer's "*pupils [were] huge*." Three minutes after being loaded on the gurney, one paramedic felt for Mr. Bauer's pulse via the carotid artery but did not state whether he found a pulse or not.

Mr. Bauer was loaded into the ambulance for transport to the hospital. Before the ambulance began transport (19 minutes after the WRAP was in place), the paramedics evaluated Mr. Bauer's vital signs. A paramedic then approached Officer Lengel and told him that they "*think he coded*."[17] The paramedics started resuscitation efforts.

Officers Lengel and Socha removed the top portion of the WRAP device, and resuscitation continued. Mr. Bauer was given three 0.1 mg/mL units of epinephrine, an endotracheal tube was placed, and a LUCAS device (mechanical chest compressor) was used to replace manual CPR.[18] The ambulance arrived at Stanford Valley Care at 15:45, at which point care was transferred to the hospital staff.

Upon arrival to the hospital, the emergency department doctor had to reinsert the endotracheal tube, as the one inserted by the paramedics ***was in his esophagus***, rather than his trachea.[19] Mr. Bauer subsequently received several rounds of epinephrine, and his pulse oscillated between asystole and pulseless electrical activity. Continued resuscitation efforts were unsuccessful; his pulse did not return, and death was declared at 16:15 on August 1, 2018.[20]

Autopsy report:

On August 2, 2018 at 9:15, an autopsy was conducted by Dr. Ferenc.[21] The external examination revealed injuries to the head, neck, torso, and limbs, including abrasions to the head, conjunctival petechiae, contusions to the anterior fatty tissues and fat and muscle of the back, and abrasions and contusions of the wrists and arms.

Mr. Bauer was 5'9" tall and weighed 274 pounds, which classifies him as extremely obese with a BMI of 40.5. He was found to have cardiac hypertrophy and dilation, foam in bronchi, pulmonary congestion, an enlarged spleen and liver, and a toxicology screen positive for methamphetamine (0.42 mg/L).

Notably, the 4 mg of midazolam that was administered to Mr. Bauer intramuscularly was *not* detected in his postmortem blood. This finding led Dr. Ferenc to conclude that Mr. Bauer's

[15] EMS report, page 2
[16] Lengel video, PPD 402, timestamp T22:19:07Z
[17] Lengel video, PPD 402, timestamp T22:29:59Z
[18] LFPD incident report, page 4
[19] Stanford Valley Care pages 1-10, page 4
[20] Stanford Valley Care pages 1-10, page 8
[21] Coroner report 0306218

"*circulatory system had already collapsed or was in the process of collapsing when the dose was administered*."[22]

Dr. Ferenc concluded that the cause of death was due to acute methamphetamine toxicity, and that other significant conditions included probable mechanical asphyxia while being placed in restraint device by police, cardiac hypertrophy, and morbid obesity. The manner of death was ruled as an accident.

A second autopsy was performed on September 12, 2018 at 9:30 by Dr. Cyril Wecht (forensic pathology), at the request of Mr. Bauer's family.[23] In his report, Dr. Wecht concluded that the cause of Mr. Bauer's death was a result of asphyxia during physical restraint by police, including blunt force pressure and impacts, handcuffing behind the back, encasement in the WRAP, and spit mask.[24] He added that acute methamphetamine intoxication, TASER shocks, and morbid obesity were contributing factors to Mr. Bauer's death.

Medical and other records reviewed for history of events

Plaintiff's second amended complaint
Coroner Report 03062018
Death Certificate
Dr. Knight preliminary report, dated 10/20/2020
Autopsy photos
EMS report
LPFD Incident report
LPFD patient care report
Allergy and Asthma Scan 0772
Dr. Gonda psychiatric intake form, dated 3/6/18
Valley Care Stanford report
Pleasanton police department, 1159-1427 - Administrative review of incident 18-30256
Pleasanton police department, 1-231 - investigation reports
Dr. Wecht preliminary report
Dr. Wecht secondary autopsy, dated 9/12/2018
Video footage from body cameras of:
    Sergeant Sansura
    Officer Lengel

[22] Coroner report 03062018, page 4
[23] Lab Report Bauer 031819
[24] Wecht prelim report 03132018

Officer Bennett
Officer Knight
Officer Travao
Officer Middleton

Bystander video footage (PPD382)

Analysis and opinions

Injury causation methods

In evaluating the most likely cause of Mr. Bauer's death, the plausible causes or risk factors for sudden death can be placed in 2 categories: the risks attributable to the actions of the officers (including mechanical obstruction of respiration and multiple TASER shocks), and the risk attributable to the conditions present in Mr. Bauer and unrelated to the actions of the police officers, and described in the autopsy report (methamphetamine intoxication, morbid obesity, heart disease). There are no other apparent causes of sudden death for Mr. Bauer identified at autopsy or in any of the reviewed records.

The investigation of the cause of an injury is different than for a disease, primarily because there is typically a close temporal association between the suspected cause of death and the first signs of injury. There are systematic methods for assessing questions of injury and death causation in a medicolegal setting that have been described extensively in the peer-reviewed literature. Most simply put, an injury causation analysis for a specific individual is performed by assessing the risk of injury from a harmful event and comparing it to the probability that the injuries or conditions would have been present at the same point in time *in the individual* if the harmful event had not occurred.

The analysis is accomplished via the application of expertise and knowledge from several disciplines depending on the source and type of injury, nearly always including medicine and epidemiology.[1]–[3]

Note: citation numbers in brackets [] refer to the bibliography at the end of this report, as opposed to the footnotes, which are superscript numbers.

In a death investigation involving an autopsy the pathologist identifies, describes, and diagnoses observed conditions, but the determination of the cause of a death in the absence of a condition that is nearly always fatal (*i.e.* gunshot wound to the head) is made via comparison of competing risks of sudden death acting on the individual at the time of the death.[4]

The generally accepted methods for assessing injury and death causation are simply described as a 3-step process based on the Bradford-Hill criteria,[5] which has been extensively described in the peer-reviewed literature, and been deemed generally accepted by US Courts, and described as part of case law in the United States.[6]–[8]

The three fundamental elements of an injury causation analysis in the context of a death investigation are as follows:

1) **Plausibility:** whether the injury mechanism had the potential to cause the death (general causation), and if known, the magnitude of that potential (risk of death);
2) **Temporality:** the degree of temporal proximity between the injury mechanism and the death; and
3) **Alternative explanations**: whether there is a more likely alternative explanation for the death or fatal injury occurring at the same point in time, versus the investigated cause (also known as a differential etiology). This alternative or competing cause of death or fatal injury is quantified for the individual, given their predictive characteristics and the temporal relationship quantified in step 2.

Analysis of the most probable cause of Mr. Bauer's death

In the following section of this report is a discussion and analysis of the most probable cause of Mr. Bauer's death within the context of the 3-step causal analysis process described above. This process is accomplished by first enumerating the potential causes of death acting on Mr. Bauer and assessing which are *plausible* causes of death, and if so, what *risks* are associated with the plausible causes. The next step in assessing causality is temporality; for the present analysis this consists of a description of the timeframe during which the plausible risk factors for death would have acted on Mr. Bauer between the initiation of the restraint by officers Middleton and Chin and the time of his cardiopulmonary arrest. The last step of the analysis consists of a quantitative comparison of the magnitude of the risks presented by each of the plausible causes of death (*i.e.* differential etiology).

Step 1: Potential causes of Mr. Bauer's death

Based on the fact pattern surrounding Mr. Bauer's death and Dr. Ferenc's autopsy findings and report, the list of proposed probable causes of death for Mr. Bauer is as follows:

- Restraint related
  - Asphyxia due to chest/abdomen compression
  - TASER shocks
- Non-restraint related
  - Acute methamphetamine toxicity
  - Cardiovascular disease (cardiac hypertrophy)
  - Obesity

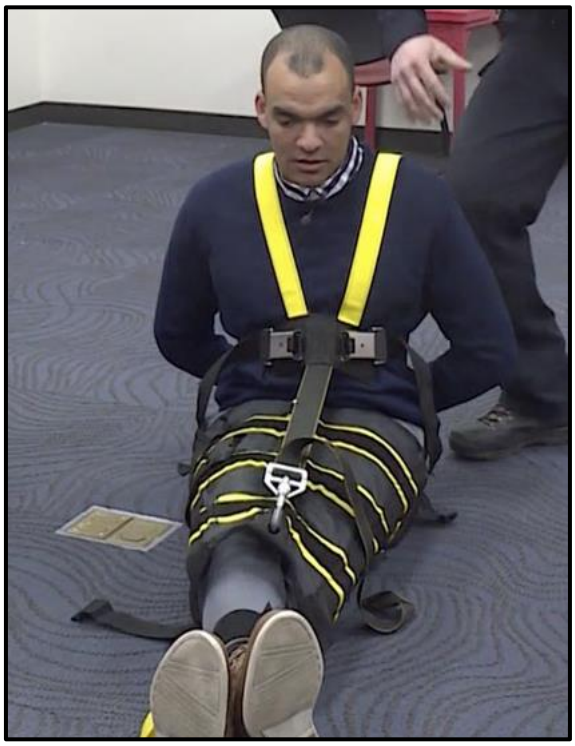
The following discussion addresses the plausibility of these potential causes, and, when known or knowable, the risks associated with them:

Restraint-related causes

Asphyxia due to chest/abdomen compression

As seen on the video footage taken from the body cameras of officers Middleton, Bennett, Lengel, Travao, Knight, and Sergeant Sansura, and the bystander footage taken from across the street, Mr. Bauer was subjected to full-bodied restraint, including force at the head into the pavement sufficient to cause significant contusions and abrasions to both sides of his face and his head. The facial injuries are depicted in the autopsy photograph below.

As described above, in the minutes preceding Mr. Bauer's cardiorespiratory arrest, multiple officers had fastened a WRAP device to his legs and torso, keeping him in a 90-degree angle. An image of the intended use of the device is shown below:

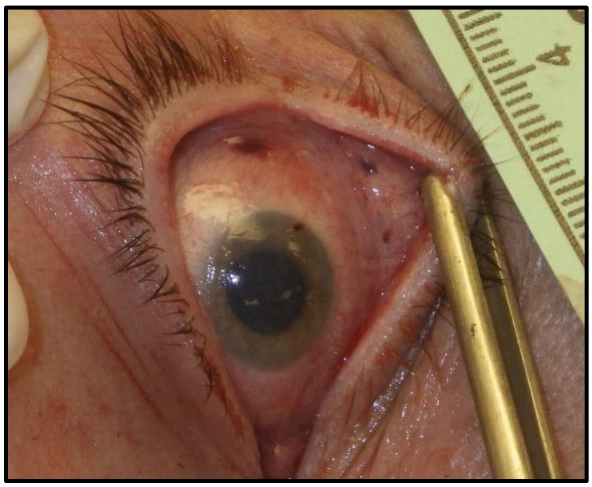


The purpose of the device is to limit the possibility of restraint-related death or injury due to prone restraint, a topic which has attracted much attention and generated substantial controversy in the scientific literature.[9]–[14]

By keeping the body in a 90-degree L-shape, risk of asphyxia due to suffocation or compression, which can result from the application of bodyweight to the back of a prone and restrained subject, is theoretically lessened. Once in the WRAP device, the handcuffed individual no longer presents an elusion or officer injury risk, and there is no need for further manual restraint.

Asphyxia is defined as a lack of oxygen (*i.e.* hypoxia) caused by an interruption in breathing, and is a well-known trigger of cardiac dysrhythmia and arrest.[15] Compression of the neck, chest, and abdomen during physical restraint is a well-recognized mechanism causing asphyxiation due to restricted inspiration.[16] Positional asphyxia, in the context of restraint, typically refers to increased difficulty with breathing that is associated with the use of restraint (*i.e.* handcuffs, hobble restraint) that is used on a prone person, but can occur in any position in which a person is forced into a position that limits their ability to breathe. The terms compression and position are sometimes used interchangeably when referring to the circumstances of asphyxial death.

There is highly reliable evidence that Mr. Bauer suffered from asphyxia related to the restraint seen in the video footage. During autopsy Dr. Ferenc noted and documented petechiae (hemorrhages/capillary dilation) in the whites (sclera) and conjunctiva of Mr. Bauer's eyes and eyelids (see image below from Mr. Bauer's autopsy). The finding results from the mechanical obstruction of respiration and venous return to the head.



Additional contemporaneous evidence that Mr. Bauer was asphyxiated is the video evidence that while he was restrained in the WRAP device, and was forced forward into a flexed position with his hands cuffed behind him his breathing became shallow and rapid,[25] his face became congested,[26] the last clear phrase he can be heard saying is that "*they're suffocating me*",[27] and that he "*can't breathe*."[28] He was undeniably in arrest and cardiovascular collapse at the time of the midazolam administration, and shortly after was observed to have dilated and fixed pupils.

The WRAP device is designed to keep a person seated upright without restricting airflow or respiration. Mr. Bauer was obese, and had a large abdominal pannus, or layer of overhanging fat, which, when his torso was flexed, added bulk against his normal abdominal movement required for respiration, by restricting the movement of his diaphragm. After the WRAP was fastened, Mr. Bauer remained in the restraint position, with his abdomen pressed against his legs and officers leaning their bodyweight against his back intermittently, for approximately 19 minutes.

When Mr. Bauer told the officers that he couldn't breathe, the response by one of the police officers was "*You can breathe, that's why you're yelling still*." **The myth that a person who can speak is not in danger of asphyxia is a dangerous misconception,** likely based on misapplied reasoning

[25] Sansura video, PPD 396, timestamp T22.13:32Z
[26] Sansura video, PPD 396, timestamp T22:14:28Z
[27] Sansura video, PPD 396, timestamp T22:12:30Z
[28] Sansura video, PPD 396, timestamp T22:14:37Z

related to first aid choking protocol. While it is true that a *choking* person cannot speak, it is entirely possible that a person with restricted respiration due to chest compression can move enough air to produce sound, but not enough air to sustain gas exchange and avoid hypoxia. A normal breath for an adult is about 400-600 mL in volume, and it takes approximately 50 mL of gas per syllable of speech, but a person saying "I can't breathe" would only use up about 150 mL of gas.[17] It is entirely plausible that a person can form words at the same time that they are asphyxiating. Prior to his cardiopulmonary arrest, Mr. Bauer's breathing can be observed to have become shallow. Shallow or chest breathing is defined as breathing that relies on the intercostal muscles rather than the diaphragm to draw air into the lungs, and can be observed by the rapidity and short duration of Mr. Bauer's breaths. Shallow breathing does not allow for adequate gas exchange in the lungs. The cause of Mr. Bauer's shallow breathing was the physical obstruction of his abdomen, which was crowded into his thorax and diaphragm when his torso was forced forward into flexion onto his restrained and physically pinned legs. At the point where he lost consciousness he lost the ability to physically push back into a more upright position, and this would have effectively exaggerated the compression of his abdomen into his diaphragm as the officers continued to press him shoulders and upper back toward his legs, culminating in the cardiopulmonary arrest.

Based on the preceding discussion and analysis, the restraint applied to Mr. Bauer while he was prone and handcuffed, and then in a seated position via a combination of the WRAP device, handcuffs, and forced forward flexion from the officers over a period of 19 minutes was the only apparent cause of the asphyxial signs observed at the scene and at autopsy, and served as a highly plausible cause of the cardiopulmonary arrest that resulted in his death.

Electrical shock from electronic control device (TASER)

While in a prone position and still capable of struggling, Mr. Bauer was tased six times. The first four times amounted to 21 seconds of tasing over 30 seconds, while the fifth and sixth times were approximately 1 minute later, with a 5-second rest between the two, while he was laying prone on the ground.

Electronic control devices, most commonly called TASERs, are designed to incapacitate an individual using an electric shock or shocks. The models used by law enforcement personnel typically have projectiles, connected to the device via thin wires, so that the electric shock can be administered at a distance. The introduction of an electrical current into the human body is a highly plausible and well-established mechanism for producing dysrhythmias, and thus it is unsurprising that law enforcement use of TASER has been associated with over 630 deaths between 2001-2014.[18]

While some studies have reported that TASER use has little or no impact on cardiac or respiratory function, virtually all of these papers were funded by the company that makes and sells TASER devices. This issue was highlighted in a 2011 paper in which researchers found that papers funded by TASER were 18 times more likely to conclude that the devices are “safe” as compared with studies that were not funded by the company.[18] In contrast, studies that have not been funded by TASER have reported a number of adverse effects from TASER deployment, including dysrhythmias and associated cardiac arrest.[19]

The studies that conclude that TASER is a safe restraint technique fail to adequately recreate the events that typically lead to TASER shocks: the studies are of healthy volunteers in controlled environments, which does not even slightly resemble the real life circumstances of a person tased by police, often including a subject with mental illness, drug use, concurrent restraint (i.e. multiple officers’ bodyweight), *multiple* TASER shocks, and vigorously fighting and resisting arrest.[20], [21] In a study of TASER shocks among real-life circumstances, study authors Strote et al. found that less than 5% of all TASER encounters include shocking a subject more than 5 times.[22] The fact that Mr. Bauer was tased 6 times places him outside of what has been studied in the literature, and in an substantially increased risk category for TASER-related injury.

Ordinarily, a TASER shock carries a very low risk of cardiac arrest when used by law enforcement, but this was not the case for Mr. Bauer, however. At the time the TASER was used on Mr. Bauer he was in delirious and highly excited; he was screaming, hyperventilating, and confused. In addition to the potential for dysrhythmia, the use of TASER can also increase the need for oxygen in a tased individual. Combined with the positional asphyxia factors described above, the use of the TASER is a plausible contributing cause of Mr. Bauer’s cardiopulmonary arrest and death.

Non-restraint-related causes

Acute methamphetamine toxicity

Mr. Bauer was found to have a postmortem blood concentration (taken on 8/2/18 at 09:00) of methamphetamine of 0.42mg/L. Methamphetamine is a stimulant that is primarily consumed illegally as "crystal meth," or simply "meth," in a powder form that can be smoked, injected, or ingested orally. Use of the drug is highly prevalent; there were 42 tons of crystal meth consumed in the US in 2010, and in 2013 1.2 million Americans used the drug.[23]

In contrast with opiates, however, crystal meth has a relatively low hospitalization and death rate; there were 103,000 emergency room visits associated with meth use in 2011, and in the same year there were ~2,700 deaths attributed, at least in part, to meth exposure, resulting in a death rate of 1 in 444 relative to the number of people taking the drug annually (the deaths were not all necessarily due to methamphetamine toxicity, however). As the typical dose of meth ranges from 10 to 40 mg, this means that there are at least 11,340 doses available per pound of meth, (assuming a 40 mg dose), 22.7 million doses per ton of meth, and thus a total of 953 million doses of meth consumed in the US in 2010 alone.[24] A comparison of the number of doses to the number of deaths each year yields a risk of 1 death per 353,000 doses of methamphetamine.[14] While no illicit drug use is considered "safe" (and thus any level in the body is considered toxic), the risk of death from a single dose of methamphetamine is exceedingly small.

There is no evidence that supports the implication that the very small amount of methamphetamine in Mr. Bauer's blood (0.42 mg/L) was even a *plausible* cause of his death in the absence of the violent restraint. The level of methamphetamine assayed in Mr. Bauer's antemortem blood sample is less than what is commonly found in recreational users, a fact that is established in a publication by the National Highway Traffic Safety Administration.[24] Other studies have described non-lethal blood concentrations in recreational methamphetamine users of as high as 9.3 mg/L (+22 times greater than the level found in Mr. Bauer's blood).[25] While methamphetamine deaths have been recorded with blood levels as low as 0.05 mg/L this information is essentially useless in the present investigation. There is extensive overlap between what are only *possibly* fatal levels and common recreational blood concentrations of methamphetamine.

Given the exceedingly low per-dose risk of death associated with methamphetamine use, there is no reason to believe that simply because Mr. Bauer had methamphetamine in his blood that *might* be fatal, that the cause of his death was related to methamphetamine toxicity. Methamphetamine isn't like cyanide or some other poison, which is invariably the cause of death when it is found in a decedent. Like alcohol, most of the time that amphetamine is present in a decedent it is *not* the cause of death. Thus, at the levels found in Mr. Bauer blood shortly before he died,

methamphetamine toxicity was a highly unlikely cause of his death, in the absence of the restraint-related death risk.

Cardiovascular disease

The post-mortem examination of Mr. Bauer's heart revealed cardiac hypertrophy (enlargement of the heart, at 440g). The condition was unrelated to a history of cardiac-related illness in Mr. Bauer, and as such, he was no more prone to sudden cardiac death than any other obese men in his age group.

As an illustration of how remote Mr. Bauer's risk of sudden cardiac death was at the time of his death, epidemiologic study indicates that the risk of sudden cardiac death in the general population of adult men aged 35-44 with cardiac hypertrophy is 0.2 per 100,000 per year,[29] or 1 in 500,000. Even if I assume that Mr. Bauer was in the least healthy 1% of his population with regard to cardiac health (an overestimation of the impact of his cardiac pathology relative to the general population his age, particularly as he had no atherosclerosis found upon autopsy), this would make his annual risk of sudden cardiac death (while accounting for hypertrophy), 1 in 5,000.

Applying this annual risk to the approximately 15 minutes between when Mr. Bauer says, "Can't breathe" (his last words), and when the paramedics said that he had coded, when he was at risk of death due to positional asphyxia results in a risk of sudden cardiac death of approximately 1 in 175 million.

Based on the previous discussion, it can be concluded that Mr. Bauer's heart enlargement was not an independent risk factor for his sudden death, in the absence of the restraint-related death risk.

Morbid obesity

Mr. Bauer was 5'9" tall and weighed 274 pounds, which placed him in the *morbidly obese* category of the Body Mass Index (BMI) matrix. Obesity is the second leading cause of preventable death in the United States because it is often a precursor to chronic diseases including diabetes, hypertension, heart disease, and cancer. These diseases develop over multiple decades and are seen in older people, but do not present an increased risk of sudden death in people like Mr. Bauer.[26], [27] There is no indication in any of the reviewed materials that indicate that Mr. Bauer's death was plausibly related to his obesity in any respect unrelated to the actions of the police officers.

[29] Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple cause of death, 1999-2016. CDC Wonder online database. Released December 2017. Atlanta, GA. Accessed January 25, 2021. Retrieved from http://wonder.cdc.gov/mcd-icd10.html

The only plausible relationship between Mr. Bauer's obesity and his risk of death was the mechanical effect his large abdomen had on his diaphragmatic excursion, once his torso was forced into flexion while the WRAP restraint was in place.

Step 2: The timing of events leading to Mr. Bauer's death

The table on the following page was created after reviewing the body camera footage and audio of officers Middleton, Bennett, Lengel, Travao, Knight, and Sergeant Sansura, and the bystander footage taken from across the street. Officers Middleton and Chin were the first on scene to interact with and attempt to restrain Mr. Bauer. Officer Middleton's video footage stopped when he took Mr. Bauer to the ground and his camera fell, and officer Chin's camera footage was not available at the time of review. Thus, there is no video footage (although there is audio) of the restraint for approximately 45 seconds, which is when the bystander footage began recording.

The table begins when Officer Middleton first contacted Mr. Bauer and began to ask him questions. The first column is the timestamp from the overall interaction, beginning at 00:00 when Officer Middleton initiates contact, the second column is the timestamp beginning when the WRAP device is secured, and the third column is a brief description of the event.

Time from initial contact	Time since WRAP applied	**Action**
00:00		Middleton and Chin make contact with Bauer to question him
02:53		Dispatch says "Your suspect is clear and valid"
03:15		Middleton and Chin attempt to handcuff Bauer
04:02		Bauer pinned to the ground by Middleton and Chin
05:16		Bauer TASED 6 seconds via dart
05:26		Bauer TASED 5 seconds via drive stun
05:32		Bauer TASED 5 seconds via drive stun
05:36		Bauer TASED 5 seconds via drive stun
06:08		Kourmiss and Travao aid in pinning Bauer to ground
06:12		Bauer struck by baton 2 times by Travao
06:20		Bauer TASED 5 seconds via drive stun
06:30		Bauer TASED 5 seconds via drive stun
08:14		Bauer successfully handcuffed, pinned by 5-6 officers
12:09		Leg restraints applied to Bauer
16:14		Spit guard is placed over Bauer's face
17:40	00:00	WRAP successfully fastened
19:37	01:57	"They're suffocating me" as officers hold Bauer's shoulders and legs
20:39	02:59	Bauer's breathing becomes shallower and more rapid
21:44	04:04	Bauer says, "Can't breathe", this is the last thing he says clearly
21:55	04:15	**Bauer's facial congestion observed**
23:00	05:20	Paramedics arrive on scene
26:14	08:34	Paramedics administer midazolam
26:32	08:52	LFPD says, "Is he turning purple to you, or is that your guys' net?", to which Lengel responds, "No, it's his hair"
29:40	12:00	Bauer loaded on gurney, still in restraints
31:17	13:37	Paramedic attempts to wake Bauer, he is nonresponsive. "His pupils are huge."
32:17	14:37	Handcuffs replaced by soft restraints
32:50	15:10	Paramedic checks his carotid pulse, does not report findings out loud
35:17	17:37	Bauer loaded into ambulance
36:32	18:52	Bauer's mask removed and paramedic says, "He doesn't look good at all"
37:06	19:26	"They think he's coded." Resuscitation efforts begin

The first time Mr. Bauer's face is seen on video as congested (turning blue) is approximately 4 minutes and 15 seconds after the WRAP has been applied, and a paramedic commented to an officer that Mr. Bauer's face looked blue/purple nearly 9 minutes after the WRAP was applied.

Mr. Bauer was not evaluated for vital signs until approximately 19 minutes after the WRAP was applied, and around 14 minutes after the paramedics arrived on scene and after he was non-responsive. *The first time a paramedic checked his pulse was nearly 10 minutes after EMT arrival on scene, and 7 minutes after injecting him with a sedative.* It is unclear what that the EMT's reasoning was for giving a sedative to the unconscious Mr. Bauer, who was in circulatory collapse due to cardiopulmonary arrest at the time (according to Dr. Ferenc), versus simply taking his pulse, as the immediate medical issue was not that he was in a combative state, but rather that he was nonresponsive and suffering a medical emergency.

The timing between the application of restraint related asphyxia and Mr. Bauer's alteration in breathing and loss of consciousness is appropriate in sequence and proximate.

Step 3: Alternative causes/ differential etiology of the most probable cause of Mr. Bauer's death

Based on the above discussion, the only non-restraint-related causes of Mr. Bauer's death were the mortality risk of the methamphetamine and cardiovascular disease, the combined effect of which was <1 in 350,000 risk.

The only plausible competing risk of Mr. Bauer's death that was not completely related to the restraint actions was the failure of the EMT personnel to provide timely evaluation, CPR, and competent intubation to Mr. Bauer. Even if he could have been resuscitated once CPR was initiated, the fact that the endotracheal tube was introduced into his esophagus and left there without notice until at least 30 minutes after the EMTs had arrived on scene guaranteed that Mr. Bauer's chances of survival from his encounter with the Pleasanton police force were diminished to zero.

Conclusions:

Based on the preceding analysis, it is my opinion that Mr. Bauer's death was solely a result of the the use of excessive force by the Pleasanton Police Department personnel, resulting in death by asphyxia. Because Mr. Bauer's death was due to the intentional actions of others, his manner of death is homicide, rather than accident.

Gary Gwilliam, Esq.

RE: *Bauer v City of Pleasanton, et al.*

January 27, 2021

page 25 of 27

The preceding opinions were given as reasonable medical and scientific probabilities. I reserve the right to amend any of my opinions should new information come to light.

Very truly yours,

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[6] *Etherton v Owner Insurance Company. U.S. District Court of Appeals. 10th Circuit. Case no. 14-1164.* .

[7] *35 F Supp. 3d 1360 United States District Court, D. Colorado. Donald L. Etherton, Plaintiff, v. Owners Insurance Company, a Michigan Insurance Company, Defendant. Civil Action No. 10-cv-00892-PAB-KLM*. .

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