



Search and Rescue Basics – Resource Options

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It takes a combination of resources to locate individuals effectively. Being knowledgeable of advantages and disadvantages of each resource will help determine how to coordinate the use of all the available resources.

CANINE RESOURCES:

There are four primary types of Canine Resources; Tracking, Trailing, air scenting, and Human Remains Detection (HRD).

TRACKING DOGS are typically what people envision when they think of search dogs. they are trained to follow the actual steps of a person from start to finish. **Follows ground disturbance:** A tracking dog is trained to follow the exact **footprint path** of a person by detecting **crushed vegetation, disturbed soil, and scent left directly on the ground.**

These dogs usually keep their nose close to the ground and move **in a straight, methodical line**, following the person's **actual footsteps**.

Less reliant on a scent article tracking dogs often work from a known start point (last known location) and follow **track scent** rather than a specific individual's scent profile.

Used in: Military, police patrol work, and evidence recovery where a known path is likely.

Tracking dogs can often work with one specific scent using a scent article. They **CAN** work around other search teams.

TRAILING DOGS like tracking dogs, follow the general path of a person and may cut corners. These dogs are scent discriminating. **Scent discriminating** refers to the **ability of a trained dog to recognize and follow a specific individual's scent**, even in environments where other human scents are present. This specialized skill allows the dog to **"discriminate"** or **differentiate** between the target scent and all others.

In practical terms, scent discriminating dogs—such as **bloodhounds**—are trained to:

- Be presented with a scent article (e.g., clothing, bedding, or personal item) that contains the odor of the specific person.
- Lock onto that unique scent profile.
- Ignore other human odors and follow only the scent trail of that individual, sometimes over long distances and time lapses.
- This skill is critical in **Search and rescue operations, Law enforcement tracking of suspects or missing persons, Disaster recovery efforts, Search and rescue operations,**

The effectiveness of scent discrimination depends on the dog's training, the quality of the scent article, environmental factors, and time since the trail was laid. Like the tracking dog, can work around other search teams.

Search operations involving **trailing dogs, such as Bloodhounds**, often benefit from the dog's immediate and focused drive in a specific direction. Once the Bloodhound initiates a trail, **other search resources can be deployed ahead or alongside**, allowing the team to cover more ground efficiently and potentially **accelerate the progress of the search**.

Using the "**last seen**" time and applying the general rule of thumb that an average person walks between **2 to 4 miles per hour**, teams can estimate the possible distance the subject may have traveled. This calculation is essential for **establishing a logical perimeter** and prioritizing areas for focused search efforts.

AIR SCENTING DOGS is a specially trained canine that locates people by detecting **human scent particles carried in the air**, rather than following a ground trail or footprints.

These dog searches for ANY HUMAN SCENT in the area, rather than tracking a specific individual. Working OFF LEASH and often zig-zags through an area to locate scent carried on wind currents.

They are commonly used in wilderness search and rescue, disaster response, and cadaver detection. They don't require a scent article since it is looking for the presence of any person. Air scenting dogs do not need to start from a known location, but they must work in an area without ANY OTHER HUMAN INTERACTION.

In short, air scenting dogs locate people by airborne scent, making them especially effective in open-area or wide-range search where the subject's path is unknown.

HUMAN REMAINS DETECTION DOGS or HRD DOGS are specially trained canines used to locate deceased human scent, whether on the surface, buried, underwaters, or in enclosed spaces. They are trained to detect the odor of decomposing human tissue, including bones, blood, hair, and body fluids, at various stages of decomposition.

HRD dogs are trained to detect only human decomposition and ignore animal remains. Most are air scenting, using wind currents to locate odor in open or concealed environments.

These dogs are trained to give a specific alert behavior (e.g., sit, bark, lay down) when they detect human remains. They work on land (surface or buried); In water (shoreline, boat); Indoors (crime scenes, buildings); and post-disaster (collapse structures, fires).

These dogs are often found working in crime scene investigation; Homicide or suicide recovery; Disaster recovery (natural disasters, mass casualty; Cold case searches; and Historical remains recovery (e.g., war graves, archaeological sites).

VEHICLES are vital assets in search operations, supporting efforts in **containment, evacuation, and transportation**. Roadways and roadside areas can be effectively searched with a limited number of personnel.

Utilizing **emergency lights and intermittent sirens** can help attract the attention of a missing person. To maximize effectiveness, the vehicle should remain **stationary** while the siren is used in short bursts, ensuring the sound is **distinct from other responding units**.

Search crews must stay **alert for any audible responses**, and it's important that the subject has a clear and consistent **single point of focus** to guide them safely to rescuers.

ATVs are valuable for covering large areas quickly, they often move too fast for thorough and effective searching. Operators should be reminded to **reduce speed** and **periodically shut off the engine** to listen for any signs or sounds from the missing person.

When **properly equipped**, ATVs can also serve as **rapid extraction vehicles** for located individuals or be used to **deliver immediate medical assistance** in the event of an injury during the search.

HORSES offer advantages in distance and height compared to walking searchers. They possess keen senses that can help locate a subject and are quieter than vehicles, allowing riders to hear any calls or whistles from the subject

Mounted search teams offer several distinct advantages over ground searchers. Horses provide **greater speed, extended range, and elevated visibility**, enabling riders to scan larger areas more efficiently. In addition, horses possess **keen senses** that can assist in detecting a subject's presence.

Unlike motorized vehicles, horses move **quietly**, allowing riders to **better hear calls, whistles, or other sounds** from a missing person—making them a valuable resource in both wilderness and rural search operations.

AIRCRAFT for aerial searches among them are helicopters, offering the unique ability to **hover over specific areas** for detailed observation. However, **all types of aircraft** provide valuable advantages in covering **large areas quickly and efficiently**.

Aircraft equipped with **Forward Looking Infrared (FLIR)** technology can enhance search efforts by detecting body heat. However, the **effectiveness of FLIR** is influenced by several factors, including **ambient air temperature, the subject's physical condition, and the density of vegetation or canopy cover.**

PEOPLE in most search operations, most of **the effort is carried out by ground searchers.** These individuals play a critical role and should be consistently reminded to **remain vigilant for clues, pause periodically to listen, and maintain situational awareness in all directions—including behind them.**

Effective communication and **team coordination** are essential for success. Additionally, the **use of whistles** can serve as a simple yet powerful tool for **signaling or alerting the subject to their presence.**

BICYCLES offer a quiet and efficient means of covering large areas, allowing searchers to travel significant distances while minimizing noise. This reduced noise level helps preserve the ability to **detect audible signals**, such as **calls for help from the subject**, that might otherwise be masked by louder search methods.

DRONES are highly effective for covering large or difficult-to-access areas, offering rapid deployment and **real-time aerial surveillance.** When equipped with **thermal imaging technology**, drones can significantly **enhance search capabilities**, particularly in low-visibility conditions or during nighttime operations.

Trained search personnel serve in a variety of critical roles during an operation. A select group is assigned to **manage search command functions**, overseen by a designated **Search Manager.** Others are tasked with **maintaining communications** and coordinating with teams actively working in the field, ensuring a unified and efficient response.

Suspending or Terminating a Search Operation:

Key Considerations for Search Management

In any search for a missing person, there may come a time when the decision must be made to **suspend or formally terminate the search**. This decision carries significant **operational, emotional, and legal implications**, and must be handled with the utmost care and professionalism.

1. Thorough Documentation

Before ending a search, all efforts must be **clearly documented**, including:

- Areas searched, times, and methods used
- Weather and environmental conditions
- Resources deployed (personnel, K9 units, aircraft, drones, etc.)
- Any clues found or investigative leads developed

This documentation serves as a **critical record of due diligence** and can help demonstrate that **reasonable and exhaustive measures** were taken.

2. Exhaustion of Search Resources and Probabilities

A search should only be suspended after:

- All **high-probability areas have been thoroughly searched**
- **All credible leads have been followed up**
- Input from **subject matter experts** (e.g., tracking specialists, SAR coordinators) confirms that continued searching is no longer feasible or effective

3. Family and Public Communication

Search management should ensure:

- The **family is notified privately and compassionately**, with a full explanation of the reasoning behind the decision
- A **public statement** is prepared, emphasizing the scope of the effort, the professionalism of the operation, and the fact that the case remains open (unless otherwise specified by law enforcement)

Transparent communication is key to managing expectations and maintaining public trust.

4. Legal and Liability Considerations

To mitigate **potential liability exposure**, search leadership must:

- Follow established protocols and best practices for search and rescue operations
- Ensure that all team members are properly trained and equipped
- Avoid premature decisions based on resource fatigue, cost, or external pressure
- Consult with legal counsel or agency risk management (if applicable)

This helps protect the agency or organization from accusations of negligence or abandonment.

5. Post-Search Review

Once the search is called, a **formal debriefing and after-action review** should take place. This should include:

- Lessons learned
- Recommendations for future incidents
- Preservation of all records and evidence for any ongoing investigations

Conclusion:

Calling off a search is never easy. However, with **careful planning, transparent communication, and full documentation**, search managers can make this difficult decision responsibly, ethically, and in a way that **minimizes liability while honoring the seriousness of the mission**.

Founded in 1969, the Greensburg Bloodhound Team serves as a specialized unit under the Greensburg Volunteer Fire Department and operates as an exclusive resource for the Westmoreland County Sheriff's Special K-9 Assist Team. The team provides highly trained trailing K9 support to law enforcement and public safety agencies throughout Southwestern Pennsylvania and the Tri-State Area.

Training and operational standards are maintained under the guidance of the National Police Bloodhound Association (NPBA), a nationally recognized organization established in 1962 by the State Police agencies of New York, Connecticut, and Massachusetts, to promote excellence in scent discrimination trailing and law enforcement K9 practices.




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WHAT IS SCENT

A Scent Profile

A **"scent profile"** in the context of trailing bloodhounds refers to the unique combination of odor molecules **that are specific to an individual person, which the bloodhound uses to follow that person's trail.**

Here's a breakdown of what it means:

Individual Human Odor

- Every person sheds thousands of skin cells per minute, each carrying **bacteria, oils, and other biological compounds.**
- These compounds mix with external factors like diet, medications, hygiene products, and environment to form a **scent that is chemically unique** — like a fingerprint.

Scent Profile in Practice

- When a scent article (like a shirt, pillowcase, or vehicle seat) is presented to the bloodhound, the dog is being exposed to the **individual's scent profile.**
- The dog uses this profile to distinguish that person from **all others**, even in crowded areas or over long distances and time gaps.
- The bloodhound locks onto the scent molecules that **persist in the environment** (ground scent, air scent, and rafts of skin cells) and uses them to trail.

Not Just One Smell

- A scent profile is complex and includes:
 - **Volatile Organic Compounds (VOCs)**
 - **Skin bacteria byproducts**
 - **Pheromones**
 - **Environmental contamination**

Why It Matters in Trailing

- A **clean, uncontaminated scent article** helps preserve the integrity of the scent profile.
- Once a bloodhound has been "scented," they discriminate against all other human scents, trailing only the person matching that profile — this is called **scent discrimination.**