

**TOWN OF
APPLE VALLEY, CALIFORNIA**

AGENDA MATTER

Subject Item:

DRAINAGE WITHIN TRACT NO. 16492-1, (APPLE VALLEY VINEYARDS)

Summary Statement:

At the Town Council meeting of January 25, 2011, several concerned residents reported that the roadways and yards within their neighborhood, the Apple Valley Vineyards Subdivision, (Tract No. 16492-1), were flooded during the recent rain events in December of 2010. As a result, Town Council requested staff to investigate and provide a report of the flood management system constructed within this Tract. The staff presentation this evening includes photographs of the Vineyards Tract, and other nearby roadways and homes that were inundated by the series of rain storms that passed through our area during December of last year.

The storm events in December were even more severe than the events experienced in January and February of 2010 and, according to rainfall data provided by the San Bernardino County Department of Water Resources, the rainfall totals recorded in December of 2010 are some of the highest on record. Most rain gauges in the Town of Apple Valley recorded between 7-8 inches of rain for the month of December, and rain gauges located in the Mariana Foothills south of Town reported numbers that were so unusually high that staff originally dismissed them as being a mistake, (close to 50 inches of rain for the month). However, after witnessing the storm water flows that passed through Town, staff is inclined to believe that these readings are more accurate than we had originally thought.

As we have often discussed, the Town of Apple Valley experiences two types of storm damage.

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Recommended Action:

That the Mayor and Town Council receive and file this staff report.

Proposed by: Engineering Division

Item Number _____

T. M. Approval: _____

Budgeted Item Yes No N/A

The first is erosion along naturally well defined, and relatively steep, flow paths that convey concentrated flows of storm water runoff. This erosion is often extensive and the debris from the storm ends up in low areas and scattered across roadways. The areas tributary to the Desert Knolls Wash and the Mojave River are typical examples.

The second type of storm damage is ponding water, which occurs in low-lying areas at hundreds of locations throughout the Town. In these areas, water may pond in the street right-of-way, adjacent yards and private property, impeding travel and even threatening homes. This condition is particularly common in areas tributary to the Apple Valley Dry Lake, but can occur in virtually any area of Town that is relatively level.

Historically, desert rainfall events consist of a heavy, isolated cloudburst of rain activity, with relatively short storm duration. The impacts are typically confined to a relatively small area, but can cause the occasional "Flash Flood" condition of water flowing across the desert floor and has, over time, shaped the natural topography of the High Desert. The rain events of last December were very unusual in that we received a series of intense storms, passing through in quick succession. These storms distributed intense, long duration rainfall episodes uniformly over the entire region, (except for the extreme intensities reported in the Mariana Foothills). **The rainfall intensities recorded equate to receiving more than the average annual rainfall in a matter of days, if not hours.** This continuous moderate-to-heavy rainfall, uniformly occurring over the entire area, resulted in saturated surface soils and natural low spots being filled to capacity.

On Tuesday and Wednesday, December 21 and 22, the heaviest of the series of storms arrived and the rainfall intensity peaked by late morning on December 22. However, even as the skies were clearing overhead on Wednesday afternoon, the flood waters flowing into Apple Valley from the south were still increasing in volume. The flowing flood waters crested late Wednesday afternoon, and actually required State Route 18 to be closed to one lane of travel as the flood waters encroached onto the Highway between Flathead Road and Kiowa Road. This was the first time in memory that State Route 18 had flooded along this segment. Town Municipal Services crews and Engineering Division staff were in the field throughout the storms trying to ensure that the public roadways were properly signed to warn of possible flooding and, in extreme cases, actually closed to traffic due to flooding. The Engineering Division staff was able to observe the unusual flooding event and create a data base of locations that were severely impacted.

Frequently Asked Questions;

In the case of the roadway flooding that occurred in the Vineyards Tract, the following questions have been raised by residents:

1. Was the Vineyards Subdivision, (Tract No. 16492-1) constructed in compliance with the Town of Apple Valley Development Code with regard to drainage and flood protection?
2. Were the drainage and flood mitigation systems constructed within this subdivision fully functional and performing as intended during the recent rains?
3. Was the spreading of water (flooding) on the interior streets of this subdivision a failure of the system, or is this condition a design feature intended to address an extreme rainfall event?
4. If the spreading of water on interior streets is a design feature intended for extreme rainfall events, how is this potential flooding feature addressed on the subdivision map?
5. How do owners in the Vineyards Tract know if their lot will be affected during an extreme flood event?
6. Can the existing system be enhanced to increase capacity and, thus, reduce the likelihood and severity of the roadway flooding?
7. What is the process for initiating those enhancements, and how would they be paid for?

Answer to question #1: Yes. The Town of Apple Valley Development Code includes elements requiring storm runoff capture, retention, and infiltration to ensure the homes in all new subdivisions are protected from flooding. The Vineyards Tract was developed in full compliance with those standards. The design achieves the goals required by the Development Code, and also complies with California Drainage Law regarding the acceptance of storm water that historically has entered the site. Storm flows enter the Vineyards Tract from three sides, (the east, south, and west), and when the system capacity has been exceeded, the accumulated water eventually flows north out of the Tract by way of over-topping the crown of Yucca Loma Road. Public roadways are often designed and constructed to serve as a component of the storm water runoff conveyance system.

Answer to question #2: Yes. The engineered retention basins, dry wells, and appurtenant structures within this Tract are being maintained by the Town of Apple Valley, in conjunction with a Benefit Assessment District for Maintenance that is a part of this development. There was no element of the system that is not, or was not, fully functional during the recent rains.

Answer to question #3: The Hydrology Study conducted for Tract Map 16492, "The Vineyards- Phase I and II" explains that the basin structures within the subdivision were sized and constructed to comply with the Town's Development Code regarding the retention of on-site and off-site generated storm runoff. The system is designed and engineered with an adequate and conservative margin of safety that allows the interior streets to flood during an extreme storm event. The infiltration systems built into the basins are designed to de-water the roadways within hours of the storm event ending. The Tract is graded in such a way as to ensure that the homes within the subdivision are well above the flood level during these rare events.

Answer to question #4: Using the extreme flood event water elevation data contained in the Tract Hydrology Study, the limits of the potentially flooded areas within the Tract have been clearly defined. This anticipated potential flood area is identified on the Recorded Tract Map as a "Drainage Easement for the 100-year Storm Event", and it encompasses many of the interior roadways and portions of the low lying lots within the tract.

Answer to question #5: All of the lots within the Tract that are potentially affected by the anticipated flooding during an extreme rainfall event are identified on the Tract Map. To ensure that all future owners of these lots are aware of the potential flood possibility, the "Drainage Easement for the 100-year Storm Event" will appear on the official Title Report documents for each property. It will appear as an easement like any other, and it is intended to run with the land.

Answer to question #6: As stated in answer number 1, the drainage management systems constructed in this Tract meet and actually exceed the requirements of the Town of Apple Valley Development Code. The system performed exactly as designed, and no homes within this Tract were invaded by rising flood waters. It is possible for the level of performance of this system to be enhanced by adding additional retention walls, weir structures, and dry wells within the basins. These enhancements would elevate the performance of the system well above the requirements of the Town Development Code. (It should be pointed out here that during the recent rain events, the Vineyards system was impacted well beyond its capacity not by inadequacies in design, but by flood waters entering the area from outside the Tract. Even if the proposed enhancements had been in place during this storm event, they would have had a very limited affect on the roadway flooding. Perhaps the larger question to be addressed is how to best manage the flows coming into our neighborhoods from outside).

Answer to question #7: The Drainage Management System within Tract No. 16492-1 was designed and constructed by the property owner, (the developer), to mitigate the drainage flows that have historically entered this site, and to comply with the Town of Apple Valley Development Code. This Drainage Management System was constructed for the sole purpose of managing the flood

condition that historically occurred on this property, and enable the land owner to subdivide the property and develop home sites on it. The system is not part of a regional storm drain system. The perpetual maintenance of this Tract storm drain system is ensured by way of a Special Benefit Assessment District that includes all of the new properties created by Tract No. 16492-1. The Town of Apple Valley Municipal Services Department administers the contract for basin maintenance on behalf of the Tract residents, with funding revenue generated within the Benefit Assessment District. The system maintenance is not funded by the Town. The cost assigned to each lot within the Tract was established based on the replacement cost of the system as it currently exists. To design and construct enhancements, and to perpetually maintain those enhancements, may require adjustments to the current Assessment District costs. Similar to Street Lighting and Landscaping Assessment Districts, an adjustment to an Assessment District levy may require a majority approval by the entire District, typically by way of a ballot in compliance with Prop 218. To initiate such a process, a petition is first generated by the District property owners, and submitted to the Town, indicating the desire by a majority of District member owners to increase their Assessment District levy obligation. In this case, the Assessment levy increase would be to design, construct, and maintain proposed enhancements to the Drainage Management System within Tract No. 16492-1.

In an effort to address the flow of storm water that is entering this and many other neighborhoods throughout Town, staff has been working with the San Bernardino County Flood Control District for several years to develop a new "Watershed Management Plan" that will provide uniform and consistent guidelines for future land development. The Watershed Management Plan will also help identify locations where regional storm water retention facilities may be constructed in the future to help reduce the severity of flooding within our existing neighborhoods. One such regionally significant facility has been proposed by the San Bernardino County Flood Control District in the vicinity of Tussing Ranch Road and Juniper Road. This is a location that would intercept the flows coming out of the Mariana Foothills, and could greatly reduce the storm water flows that eventually enter the Vineyards Tract.

Staff recommends that this facility be elevated to a high priority as it would likely benefit the greatest number of residents who are currently being impacted by flood waters coming from the Mariana Foothills. It would help manage the flows that currently flood homes along the Juniper/ Mohawk/Tamiani Road flow paths.

Seasonal flooding is a rare occurrence in the High Desert. Nevertheless, it is an occasional fact of life for those of us who live here. Helping our residents understand and prepare for this inevitable occurrence is a task of high importance to the Town. To help accomplish this task, we have materials available in our Town Hall lobby that are intended to help residents prepare for those infrequent, but always possible, flood events here in the desert. Based upon the foregoing, staff recommends adoption of the form motion.