



# Final Report Oso Grande

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## **Contents**

I. Background .....	Page 3
II. Tree Planting .....	Page 4
III. Survivability.....	Page 7
IV. Eco Benefits.....	Page 9
V. Program Improvements and Findings .....	Page 11

## I. Background

The Trees and Health Study performed in 2013 <sup>1</sup> reported that Albuquerque lost more tree canopy (2.7% of its tree canopy over a 3-year period) than cities that had experienced natural disasters like floods and tornados. The ABQ NeighborWoods Program was founded to replace this canopy. Championed by Albuquerque City Councilor Isaac Benton, a team was formed which included other city and state partners such as the American Society of Landscape Architects (ASLA) members Amy Bell and Robert Loftis, New Mexico State Urban Forester Jennifer Dann, Albuquerque City Forester Joran Viers, the Albuquerque Planning Department, the Albuquerque Office of Neighborhood Coordination, and Tree New Mexico (TNM). The team felt it was imperative to engage homeowners particularly, as close to 85% of Albuquerque's trees were located on private property. Councilor Benton set the precedent by using a portion of his discretionary budget to fund the initial tree planting grant program.

Briefly, the ABQ NeighborWoods grant includes 100 free street trees planted in a single day by volunteers and 100 small trees given out a week later that homeowners can plant anywhere on their property themselves. The street tree planting criteria for city egress is limited to within 20 feet of the street (more recently, the program has worked to place them within 12-15 feet). The homeowners adopting the street trees are required to sign an agreement with the city promising to water and care for the trees. The grant also includes an arborist/landscape architect audit for 3 years with feedback to the homeowners if any issues are found. Planting, tree care information and training are provided in the run-up to the planting and on planting day. Follow-up training in pruning and additional care is provided periodically to every neighborhood planted.

The ABQ NeighborWoods Program has since expanded across all nine districts of the City of Albuquerque. Since the first planting in 2017, ABQ NeighborWoods has planted and given away over 8500 trees.

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<sup>1</sup> Trees and Health App <http://map.treesandhealth.org/>

## II. Tree Planting

**Introduction:** The Oso Grande neighborhood is in the NE quadrant of ABQ. Its boundaries are from Spain to Osuna Road, and from Morris to Juan Tabo. City Councilor Trudy Jones of Albuquerque District 8 awarded the ABQ NeighborWoods program to Oso Grande.



Figure 1: Neighborhood Aerial Map (link in sources page)

**Neighborhood Involvement:** Oso Grande might be one of the smallest neighborhoods TNM has ever been involved with. Only one neighbor from Oso Grande assisted with the program. She was one of the best, so having only one member was not a drawback. This member continues to volunteer energetically for TNM to this day.

**Neighborhood Canvassing:** The sole volunteer was able to log more than 30 hours of canvassing. Since the neighborhood is small, outreach was done quickly. Our landscape architect advised us to plant a number of crapemyrtle in the planting strips along with smaller-sized trees in yards (Figure 1).

**Planting events:** The planting occurred on August 29<sup>th</sup>, 2020, with Hope Church hosting the event. They had hosted previously for the John B. Roberts planting in 2019. The following week, 100 trees were given away to the Oso Grande homeowners.

**Heat Map:** The Tree Canopy Percentage in Oso Grande was equal to the Albuquerque city average according to the Trees and Health Study<sup>2</sup>. But many areas of the neighborhood had lower tree canopy. Planting trees in these areas was designed to help mitigate traffic, noise, pollution, and heat (Figure 2).

Albuquerque, NM	Value	City Avg
% tree canopy cover	7	7
TRAQ	7.13	8.28
urban heat island index	0.39	0.41
% of residents under age 18	12	22
% of residents over age 65	33	14
% of residents living under poverty level	13	18

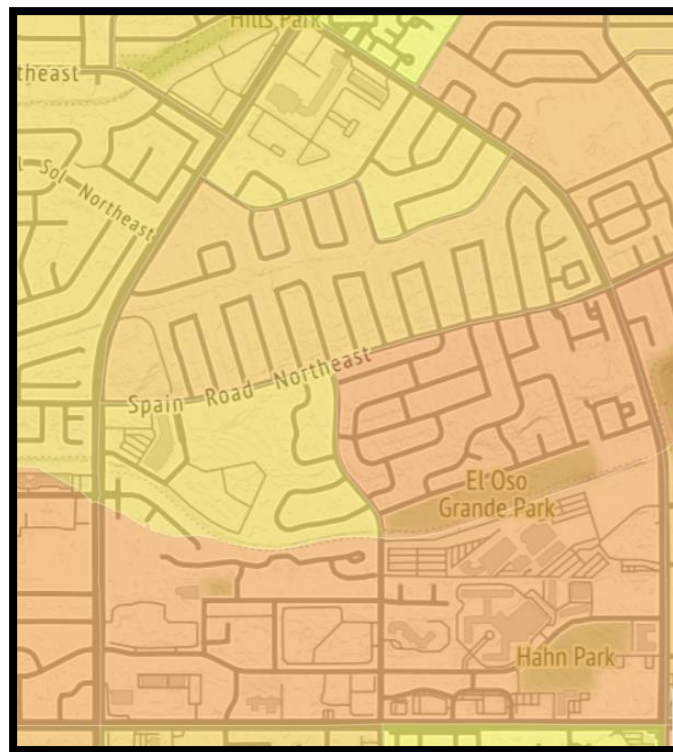


Figure 2: Neighborhood heat map – <http://map.treesandhealth.org/>

<sup>2</sup> <http://map.treesandhealth.org/>



**Growing Space:** Half of the trees were planted in front yards and half in planting strips. We found that the utilities were running underground along the front edge of the yards as well as the narrow planting strips. This made tree selection challenging. Our landscape architect’s recommendation was to plant crapemyrtle in the planting strips as it would not impede the sidewalks or trash trucks (Figure 3).

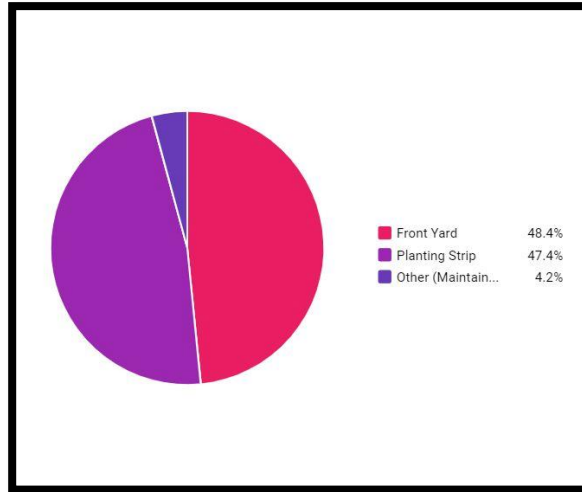


Figure 3: Growing Space - Tree Plotter App - <https://pg-cloud.com/TreeNM/>

**Tree Plotter map:** There were 95 trees planted in the neighborhood. Unfortunately, there were some difficulties with the crapemyrtles which is discussed below. TNM was not able to plant all 100 trees but got close. The five extra trees were placed into the tree giveaway.

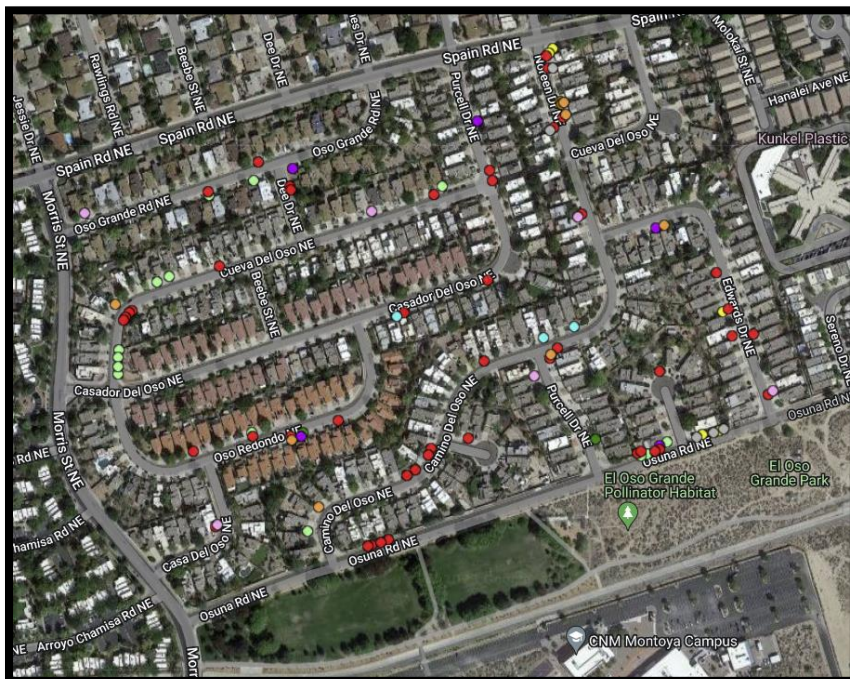


Figure 4: Planting Map – Tree Plotter - <https://pg-cloud.com/TreeNM/>  
(Colored dots indicate species types)

### III. Survivability

The ABQ NeighborWoods survivability goal was purposely set to a challenging 85% over three years of tracking. This summer marked the third year for Oso Grande, and thus a thorough inventory was performed in June of 2023.

The Oso Grande overall survivability rate was 67%. Crapemyrtle losses accounted for 80% of all the tree deaths. Aside from the Crapemyrtles, Oso Grande only lost 6 trees. This is a very low mortality rate. This shows the neighborhood would have had the potential for one of the highest survivability rates, had the crapemyrtles lived and grown to their potential (Figure 5).

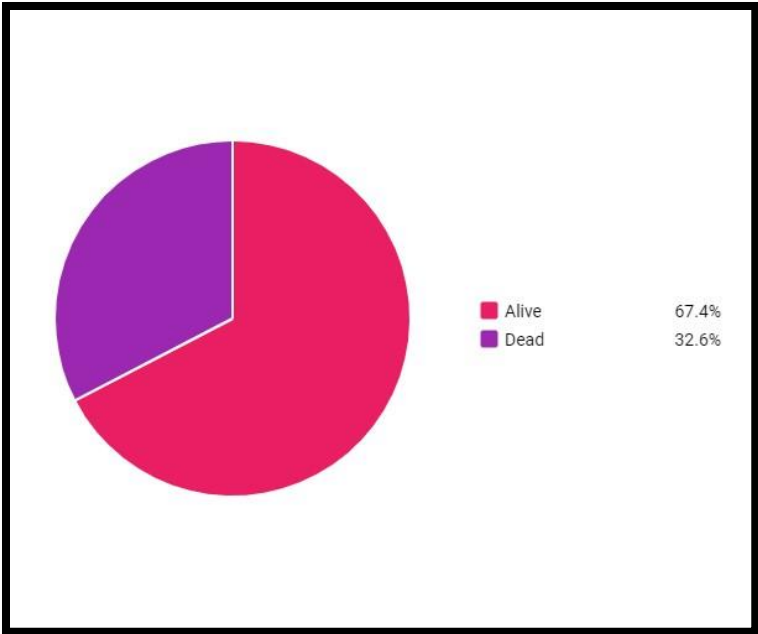


Figure 5: Overall Survivability - Tree Plotter App - <https://pg-cloud.com/TreeNM/>

According to our monitoring of all the trees planted to date in the city under the ABQ NeighborWoods program, the main contributors to mortality and ill health have been the lack of consistent, deep watering, use of weed killer near the trees, and detrimental staking procedures.

**Tree results:** The Crapmyrtles as mentioned had the most losses. The crapemyrtle details are as follows: 25 out of 42 Crapemyrtles were completely dead. Those that lived are about 2 feet tall and die back almost to the ground every winter (Figure 6 & 7). The contributing factors to the Crapemyrtles performance were the original trees supplied to TNM were substandard. They arrived just one day ahead of the planting. Unfortunately, this did not give us enough time to return and replace them. Additionally, our in-town supplier assured us that the trees would rebound and proceed to grow normally. Obviously, this did not occur, and we are investigating replacing them.

Despite the crapemyrtle losses, we found that some trees did thrive. For instance, the Desert Willow was one of the best overall species. Raywood Ash and the Emerald Sunshine elm were on average the tallest trees (Figure 6 & 7).

**Most Common Species - Top 10**

PIE BAR TABULAR

SHOW ALL VALUES

Common Name	Count	Percent
Crapemyrtle	42	44.21%
Desert Willow	18	18.95%
Shantung Maple	7	7.37%
Southwestern Redbud	6	6.32%
Vitex Chasetree	5	5.26%
Emerald Sunshine Elm	5	5.26%
Raywood ash	5	5.26%
Hot Wings Maple	3	3.16%
Smoketree	2	2.11%
New Mexico Olive	2	2.11%

**Species with Most Mortality - Top 10**

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SHOW ALL VALUES

Common Name	Count	Percent
Crapemyrtle	25	80.65%
Shantung Maple	2	6.45%
Emerald Sunshine Elm	1	3.23%
Hot Wings Maple	1	3.23%
Raywood ash	1	3.23%
Southwestern Redbud	1	3.23%

Figure 6 & 7: Species Survivability - Planted vs Mortality - Tree Plotter App <https://pg-cloud.com/TreeNM/>



## IV. Eco Benefits

During the June 2023 audit, we assessed how much the street trees had grown. We conduct the audit by measuring the height, Diameter at Breast Height (DBH), condition (Good, Fair, Poor), and status (Alive or Dead) of each tree.

The most marked growth occurred in the Raywood Ash and Emerald Sunshine Elm that got consistent watering. The DBH for the largest ones were above 1.5 inches with heights of 12-13 feet. Most of the Desert Willows were higher than 5 feet and many were 8 feet tall or more.

Using the Tree Plotter database, the current Eco benefits were calculated (Figure 8).

Oso Grnde had the lowest Eco-Benefits to date, but that was expected due to the Crapemyrtle issues..

Total Eco-Benefits	
Overall Monetary Benefit:	\$11.51
Stormwater Monetary Benefit:	\$3.70
Runoff Avoided:	55.31 (ft³)
Interception:	455.79 (ft³)
Air Quality Monetary Benefit:	\$1.84
Pollutants Removed:	1.46 (lbs)
Carbon Monetary Benefit:	\$5.97
Carbon Storage:	189.33 (lbs)
CO <sub>2</sub> Storage:	694.20 (lbs)
CO <sub>2</sub> Sequestered:	256.77 (lbs)

Figure 8: Eco Benefits - Tree Plotter App (Using iTree Algorithms) <https://pg-cloud.com/TreeNM/>

## Eco Benefits Long Term

Using iTree, a general benefits forecast for 200 trees after 20 years of average growth was calculated (Figure 9).

This calculation is used to help educate neighbors on the environmental benefits of planting trees today for the future.

<b>My Tree Benefits</b>	<b>200 Trees After 20 Years</b>
<b>Carbon Dioxide (CO2 Sequestered)</b>	\$520.00
CO2 Absorbed Each Year (lbs)	51,860
<b>Storm Water</b>	\$260.00
Rainfall Intercepted Each Year (gal)	40,000
<b>Air Pollution Removed Each Year</b>	\$160.00
Ozone (oz)	940
Other Particulates (oz)	440
<b>Energy Usage Each Year</b>	\$9,640.00
Electricity Savings A/C (kWh)	77,800
<b>Avoided Emissions</b>	
Carbon Dioxide (lbs)	164,300
Other Particulate Matter (oz)	2,420

Figure 9: itree – <https://www.arbutustree.ca/itree-how-much-are-my-trees-worth/>

## V. Program Improvements & Findings

- Many TNM lessons came from the Oso Grande planting regarding the Crapemyrtle losses.
  - Although TNM will not completely reject a batch of trees if they are treated for pests or minor diseases, we will be aware to take immediate action if they do not survive past one season.
  - TNM now observes all tree species after one season in case of a massive dieback or mortality. If we see a massive loss from a particular species, we take immediate action to investigate the situation and take appropriate action. If it appears that the fault of the tree loss was from the nursery, TNM works with the partner nursery to seek the best solution.
  - Although Oso Grande specifically had a massive loss of its Crapemyrtle, across all 2020 plantings there was evidence of dieback and mortality among this tree species. We are continuing to monitor Crapemyrtle to gather more data. In the meantime, Crapemyrtle has been taken off our street tree palette.
  - Lastly, TNM learned that planting a majority of a single species is not the best idea. Diversity has proven to be the best approach.
  - Additionally, we now have an arborist on site for the tree delivery, and we try to catch any trees with issues immediately. Our policy is to send anything questionable back to the nursery and get a replacement right away.
- Communication with homeowners about the program has been improved by sending out postcards to introduce the program prior to canvassing. This we found was key to continuing our program during Covid.
- Oso Grande was one of the last neighborhoods where homes could receive more than two trees per home. TNM began to implement two trees per home to get more neighbors to adopt. TNM has also learned that some neighbors were overcommitting, so in cases where proper watering did not occur, the tree losses were more impactful.
- We noticed that if trees are planted in a planting strip with a wall in between or a need to stretch a hose to water, the trees may suffer as neighbors seem less likely to water in hard-to-reach areas.
- We now ask if people have a hose or a way to keep their trees watered. If the neighbor has no hose, TNM strongly encourages them to buy one, and we remind them that the Water Utility Authority does offer a treebate if they purchase a new one.

- Our volunteer said she learned that you cannot make assumptions about the condition of a neighbor's yard versus how that neighbor ends up caring for the tree.
- It is best to have at least a few volunteers from the neighborhood to spread the word and help with the workload.
- TNM used bags of mulch during this planting, but we have since gone to another supplier and are now bagless.
- TNM recently experimented with data collection regarding Treebates (water credits given by the Water Utility Authority to tree adopters) versus tree survivability. There may be a correlation developing, but we will need to collect more data before a definitive correlation is proven.
- Our flyers and outreach tactics for the planting and giveaway continue to improve.
- Our volunteer and tree steward base grew despite Covid Lockdown, as we utilized more online classes and outreach.
- TNM bought new measuring tools for height and diameter this year, making our measurements more accurate and efficient.

## Sources

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