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interactions breed familiarity, and establish common interests and personal inter-relationships. Without these initial conversations, it is difficult to delve into the more meaningful social issues that communities must address, to discuss deeper personal issues, or feel comfortable taking action together. It is through these repeated conversations and interactions that community grows (Sander & Lowney, 2006).

Community gardens are places where conversations amongst dissimilar people can flourish. Neighborhoods with intentional green spaces tend to have increased informal contact (L.E. Jackson, 2002). Studies have shown that especially in low-income housing developments, residents establish stronger social ties among neighbors if they are surrounded by trees, grass, or open green spaces (L.E. Jackson, 2002). Wakefield et al. found

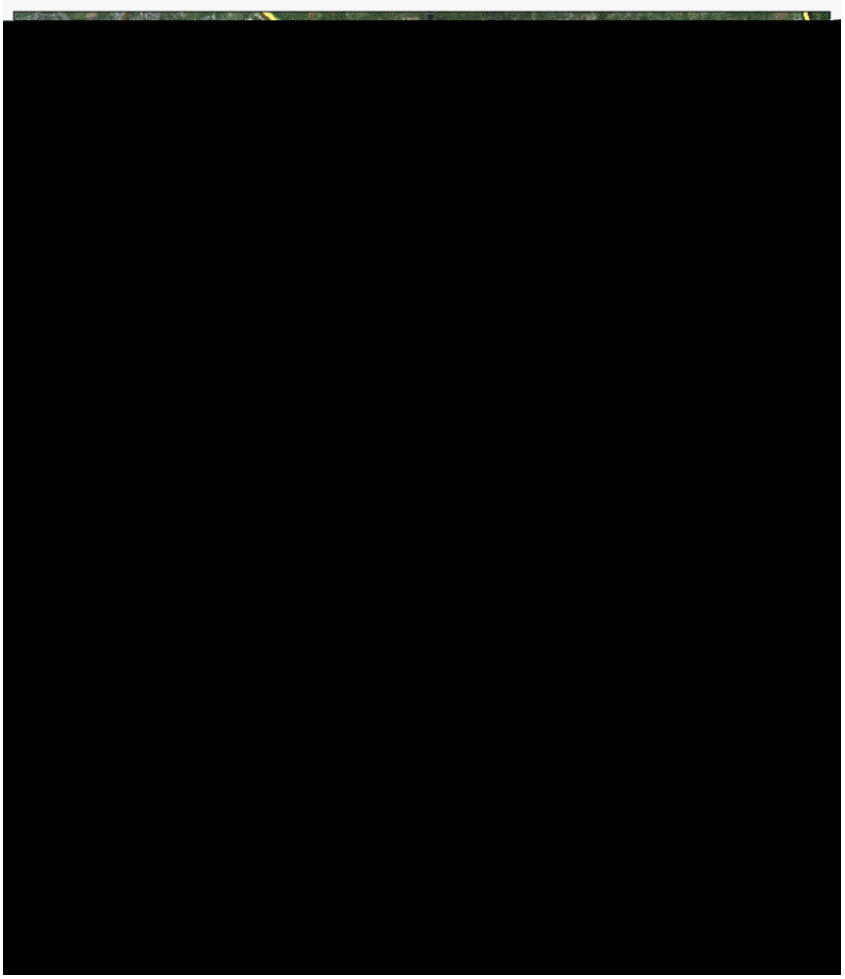
programs in upstate New York found that in more than half of the gardens surveyed, the existence of the garden had improved resident attitudes towards the neighborhood. Improved attitudes towards the community may occur because neighbors become more comfortable around each other, feel safer in their communities, or simply because the garden sites beautify their neighborhoods. When citizens feel more connected to the place they live in, they are more likely to want to make positive changes in their community. Thirty-
neighborhoo

According to Boyd et al., urban areas generally consist of two categories of surfaces (1993). Impervious surface areas (ISAs) are parcels of land that are entirely covered by impermeable material. This includes roads, parking lots, man-made structures, and in some cases roofs. ISA are artificial

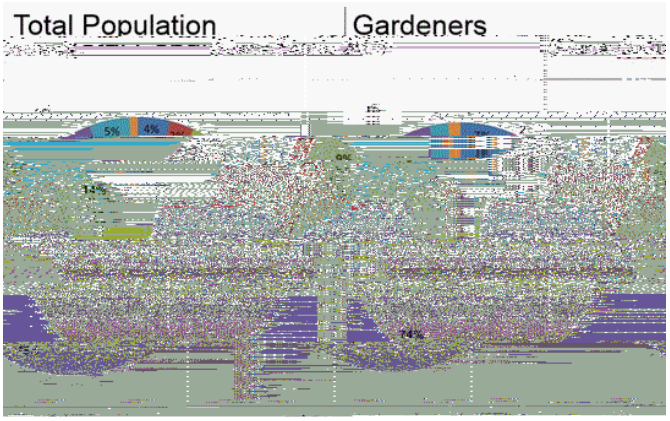
exposed to the elements and able to provide ecosystem services such as lawns, parklands, roadside vegetation, and gardens are pervious or semi-pervious areas (PSAs).

PSAs allow the earth to retain and filter water into the soil naturally. If the land is covered by an impenetrable surface, infiltration is impeded and runoff processes and transport will be exacerbated. This can facilitate the movement of pollutants (e.g. toxins, excess fertilizer and metals) into waterways, and increase erosion, sedimentation, and water temperatures, flooding and periods of low flow (Jackson 2003). Elevated concentrations of nutrients (nitrogen and phosphorus) which originate from farm or industrial activities and are more likely to contaminate surrounding land or water bodies if they are picked up by surface runoff (Weng, 2008).

ISA is



According the CDCG archives, 74 percent of CDCG gardeners were Caucasian in 2012. Compared to the demographics of the entire Capital District, a higher percentage of minorities gardened than were represented as residents in the 2010 Census, suggesting that for community gardens in the Capital District are attracting a racially diverse mix of people (Figure 2).



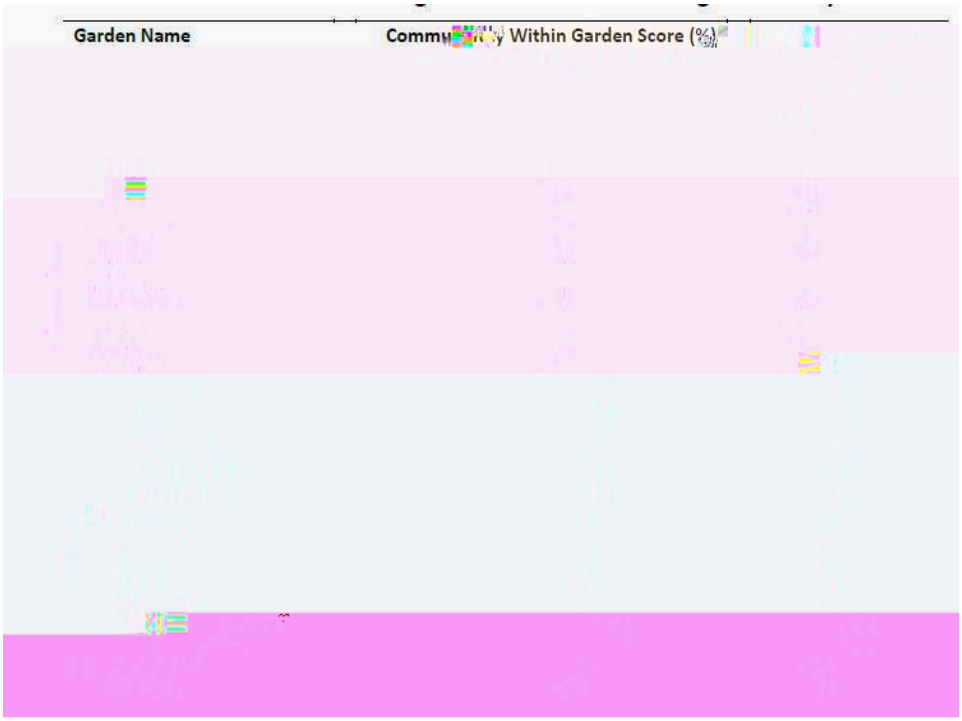
The objective of our study is to investigate how social and physical characteristics influence the functionality of community gardens in the Capital District of New York State. For the purpose of our study, we are recognizing community inside the garden, engagement with the surrounding community, soil type, and impervious surface cover to be the major agents of a community garden. The social characteristics were evaluated based on population density and garden size. Ultimately, we sought to determine which characteristics were influential in determining a successful garden and which were irrelevant. We selected two gardens that we deemed most interesting and indicative of our findings to analyze further. We anticipate our results will provide useful information to garden coordinators and participants. Our study will enhance local community dynamics and further the agricultural movement as a whole.

We conducted a semi-structured two-hour interview with the Program Manager of Capital District Community Gardens (CDCG), Sharon DiLorenzo, on February 18, 2013. The interview was designed to document the origin and goals of CDCG, the meaning of gardens, garden practices, garden-neighborhood interactions, and the impacts of community gardens on the broader neighborhood and city environment. Sharon has worked with CDCG for over 20 years and oversees many aspects of the non-profit organization, from grant-writing to acquisition of new garden space property.

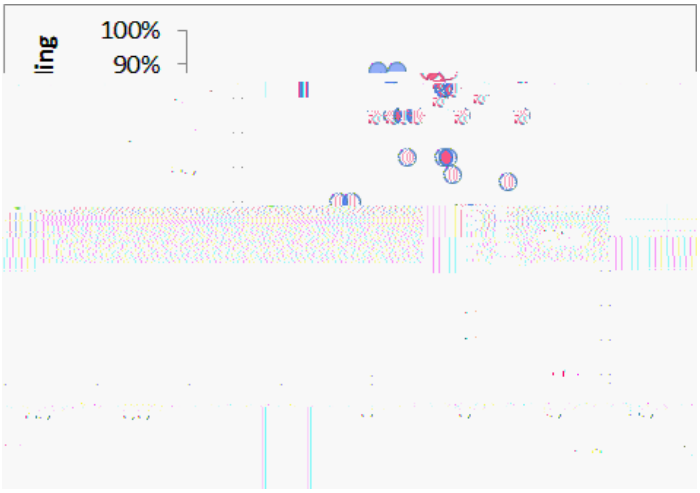
Sharon covered many topics in her discussion. Table 2 shows a few exemplary quotes of the most relevant themes and responses from the interview. The full interview transcript can be found in Appendix 3.

We quantified the answers by assigning each one a number value from 0-4, with 0 being responses that indicated a lack of community and 4 being ones that indicated a high level of community. Question 4 and 8 was scored as a=1, b=2, c=0, questions 5-7 were all ranked as a=1, b=2, c=3, d=4, and

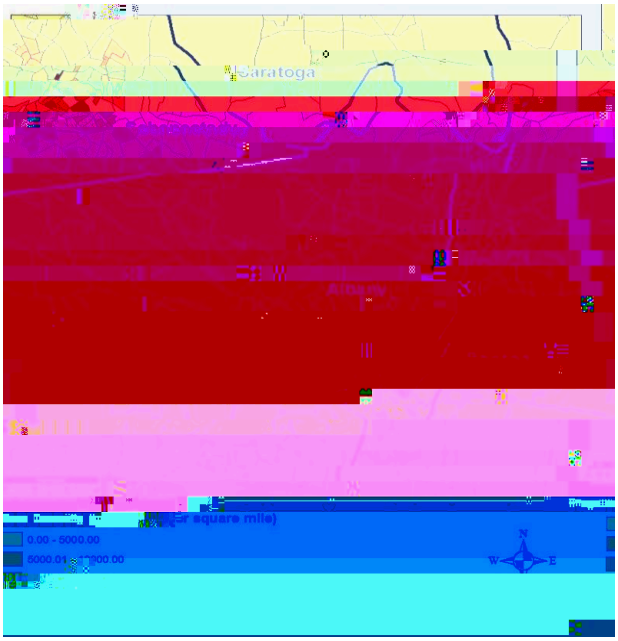
which has the lowest community inside the garden of all the Albany gardens, but scored quite highly for surrounding community, and Yun Garden which had one of the highest community inside scores but one of the lowest engagement scores.

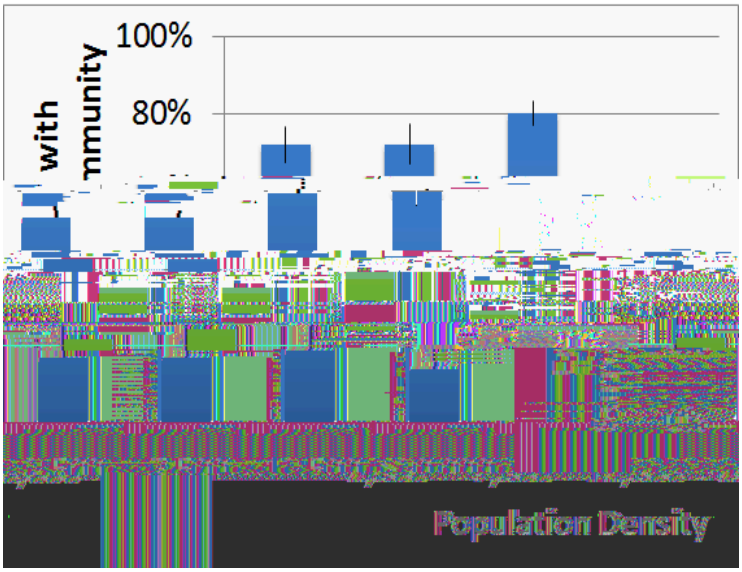


In Figure 3, each point represents a garden plotted in regards to both community scores. Ideally, gardens would be as close to possible to the upper right-hand corner, which represents the highest scores for both community types. The further away each garden is from this point, the more room the garden has for improvement.



Population density at each garden was analyzed in relation to community engagement scores (Figure 6). The scores decrease in the highest population density (Figure 5), which is over 20,000 people per square mile.

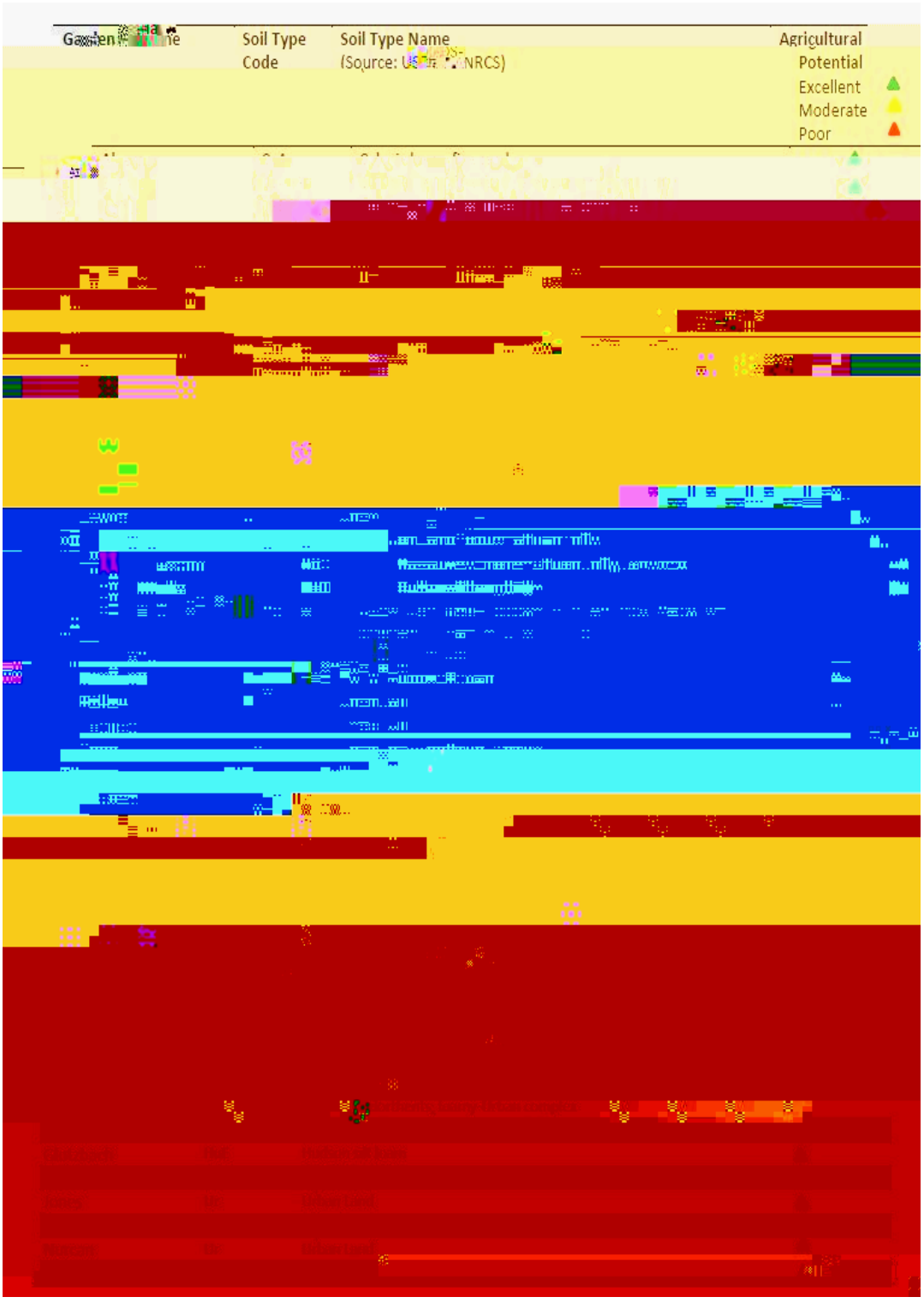




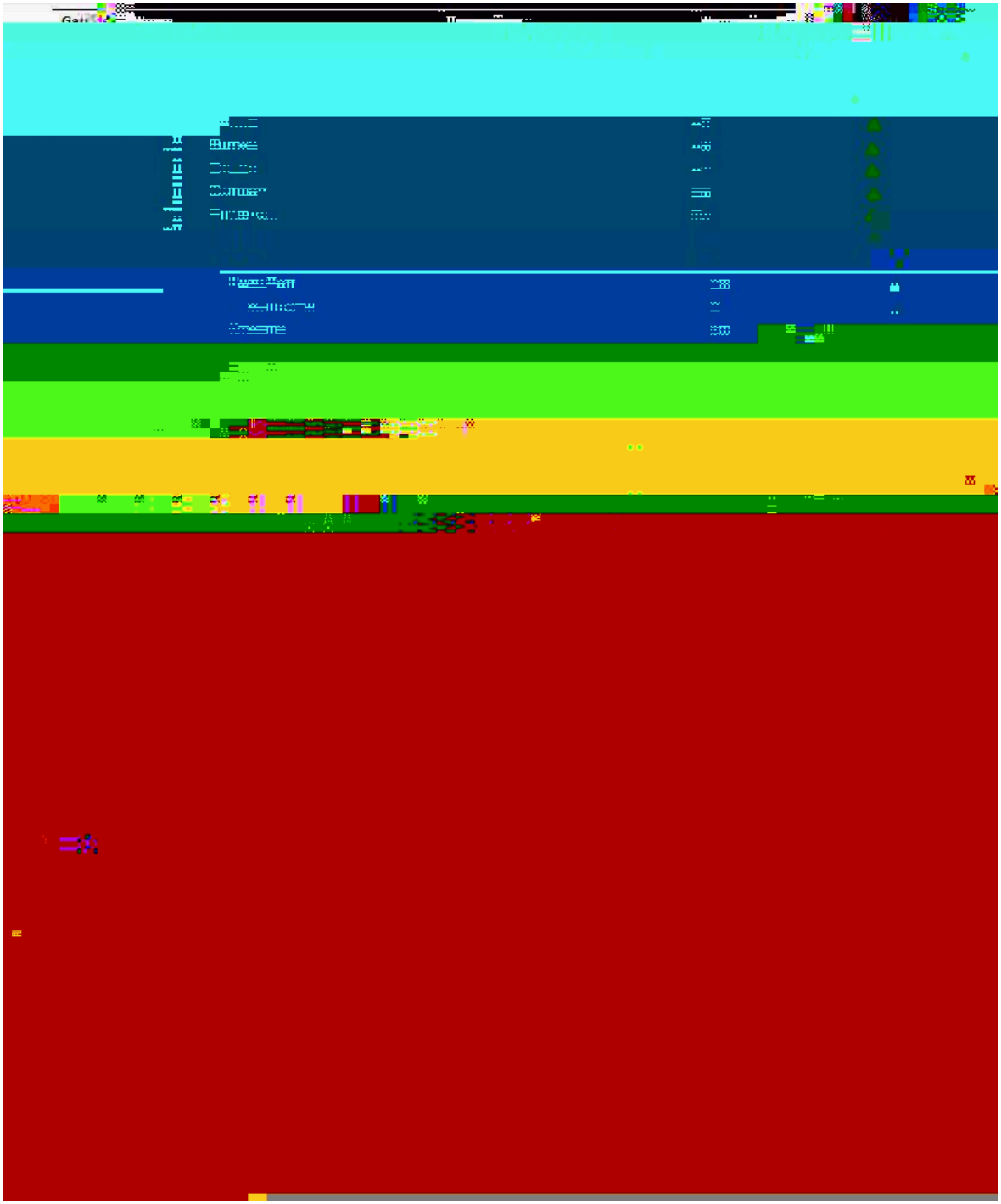
Soil type was downloaded from USDA NRCS soil surveys of Albany (2006), Rensselaer (1988), based on slope and physical characteristics of the soil, commented on its agricultural potential. With this information, we determined which soils were suitable for gardening and rated the gardens as either excellent, moderate, or poor.

We retrieved raster information from USGS (2006) to measure the amount of impervious surface surrounding each garden. Percent impervious surface ranged from 0-100 with 0 being least pervious and 100 being most impervious. We classified 0-33% impervious as category 1, 34-66% impervious as category 2, and 67-100% impervious as category 3. Using ArcGIS, we drew a 200 meter buffer around each garden and clipped these circles to the impervious surface raster with the three categories of imperviousness. We counted the number of cells in each garden radius, and converted these numbers to a percent of the whole area for each garden. We multiplied these percentages by the average percent imperviousness for each category (Category 1 average=16.5%, Category 2 average=49.5%, Category 3 average=82.5%), and the sum was used to create a single score of imperviousness for each garden. We assigned all gardens with an average percent less th , greater than 33 percent and less than 66 per , and greater than 66 percent .

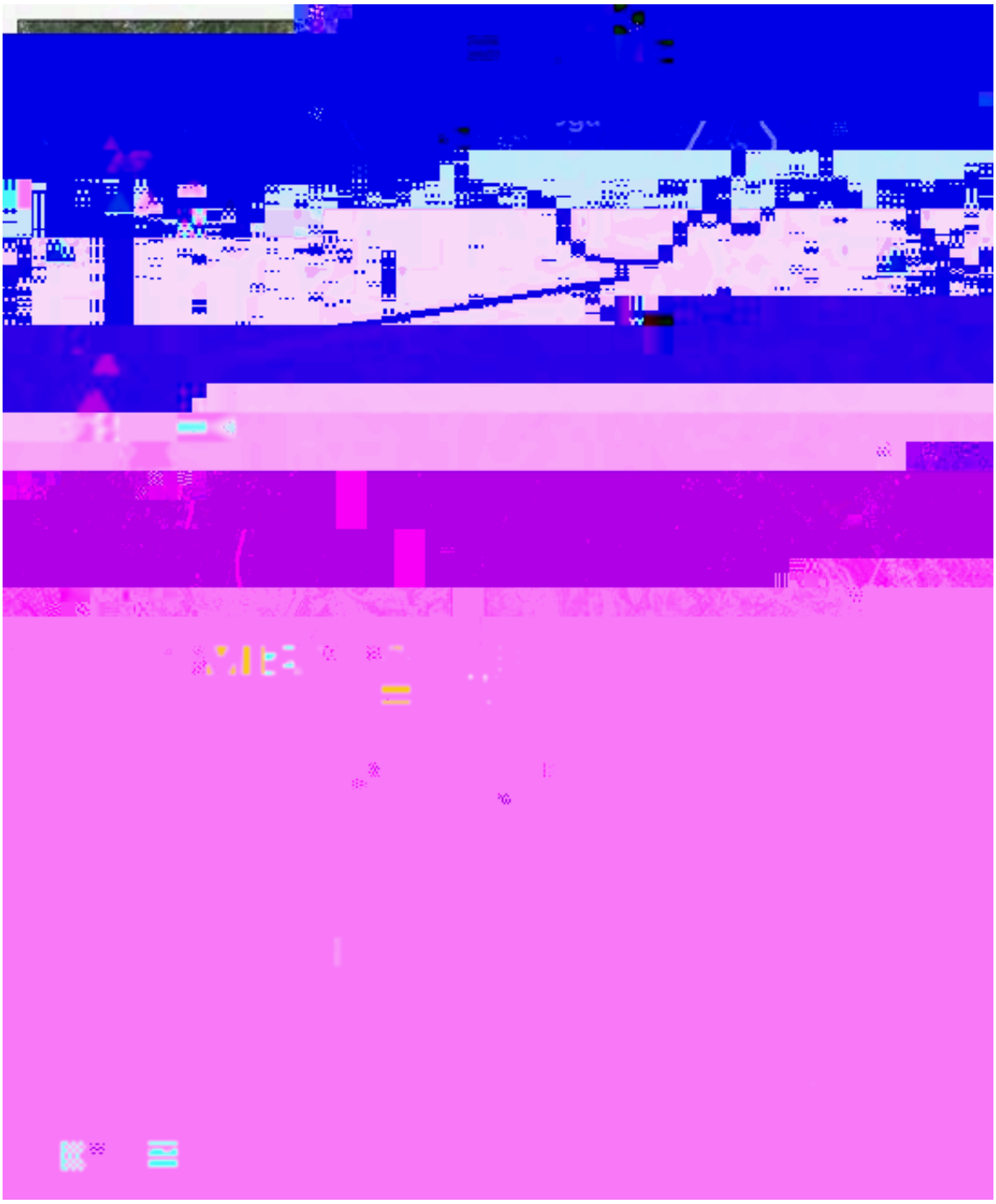
Fifteen out of the forty-nine gardens we looked at were classified to have excellent soil types. Twenty-five of the forty-nine had poor soil (Table 5).



10 of 49 gardens received excellent ratings for percent impervious surface cover and 14 of 49 received poor ratings (Table 6). The average impervious surface cover for Schenectady gardens was 51.25%. Rensselaer had an average cover of 55.56%, and Albany had an average of 46.43% impervious surface cover.



All of the poor soil conditions that we found lie within Schenectady, Troy, and Albany city centers (Figure 7), which means 85% or more of the land is covered by buildings and roads. For the most part, with the exception to a few downtown Albany gardens, excellent soil types exist on the perimeter of city centers on suburban or rural landscapes.



The gardens with the most pervious land cover are located in rural areas of Albany and Rensselaer counties and lie outside of the Albany and Troy city centers (Figure 8).

The results of our s

activity that occurred thousands or even millions of years ago. In the past century, cities have sprouted and developed at an alarming rate, irrespective of the rich and productive soils that may lie beneath. Historically, cities emerged on the banks of rivers because they provide opportunities for commerce, transportation, and an indefinite water supply for agricultural irrigation and human consumption. River deltas were the most attractive sites for early agriculture because frequent flooding events provided for healthy, loamy soil, flat land, and a consistent water supply. The confluence of the Mohawk and Hudson rivers created an ideal setting for the birth of Capital District urban centers. Ironically, agriculture was one of the major reasons why people settled down on the banks of the Hudson and today much of the land has been stripped and covered by pavement.

It is difficult to determine soil quality within our study locations because the majority of those

classification system to determine excellent, moderate, and poor soils may be skewed because some land was inaccessible for observation or sampling. It is also important to note that when rating gardens, we

example, we gave those gardens that were described to have hilly land, and thus unsuitable for growing plants, a poor rating-- even though CDCG is selective in their garden locations and would not establish a garden on sloping land. Lastly, another reason why our soil type classification may not adequately represent the actual soil conditions is that CDCG continuously imports soil into gardens that may be

ually have

highly productive soil. These speculations led us to believe that soil type is not reliable in determining overall garden success. When asked to presume what factors contribute to a well-functioning community

soil, I can tell

you that much (DiLorenzo, 2013).

The relationship between impervious surface cover and garden location is perhaps the most evident. All gardens with the highest percent pervious cover within a 200 meter radius were those that are located furthest from Albany, Schenectady, and Troy city centers. As seen on the satellite image, these gardens were located on what looks to be entirely green space. Those with the highest percent impervious surface cover were located in the densest areas and were built in small bits of open green space that is surrounded by a sea of pavement. This led us to believe that rural gardens are less susceptible to contaminated runof(f) -3 /TT10 1 T2c(ha) 9 (t) -4 (r) 7 (ur) -3 (4 (s) 273 -3y) 11 0 0 11 11 0 (dow)t

physical characteristics, but had the lowest community scores of all the gardens we studied. Seventy-five percent of the plots at Ness Park were vacant in 2012. This may be due to the fact that Ness Park is located on the outskirts of Troy, directly adjacent to a public housing project. According to Sharon DiLorenzo, it is being underutilized by the people who live next to it, and people from downtown Troy are unwilling to travel into the garden, perhaps because the neighborhood, which has a history of crime

gardeners can canvass for more participation from the housing project, and promote the garden as a safe space in which to unite the community. Saldivar-Tanaka and Krasny believe that community gardens are

development and neighborhood dynamics are more complex and, unlike environmental factors like soil or pavement, are harder to manipulate and control. Thus, social characteristics are most indicative of garden success and ensuring their predominance in community gardens should be prioritized over physical characteristics.

Today, there are more people living in cities than in any other parts of the world. Private organizations, urban planning committees, or individual community members should encourage the establishment of community gardens. If a community garden is located in or around a city center, it is more likely to succeed in enhancing local communities and providing fresh, local produce to underserved populations.

The knowledge gained from this study can be applied in several different ways. First, our findings can substantially improve social or physical conditions in pre-existing gardens. Those gardens deemed as

garden managers are aware of the weaknesses within their gardens, they may focus their attention on such areas and the overall garden atmosphere in order to improve productivity.

Our study can also influence the allocation of space for future community gardens. Our findings can direct garden managers and urban planners in establishing gardens in places that have ideal population densities and neighborhood characteristics that make for the most successful community gardens. Above all, the knowledge gained from our study will be valuable in creating thriving community gardens that are able to provide high quality food to community members in need and revamp social, economic, and environmental aspects of urban communities.

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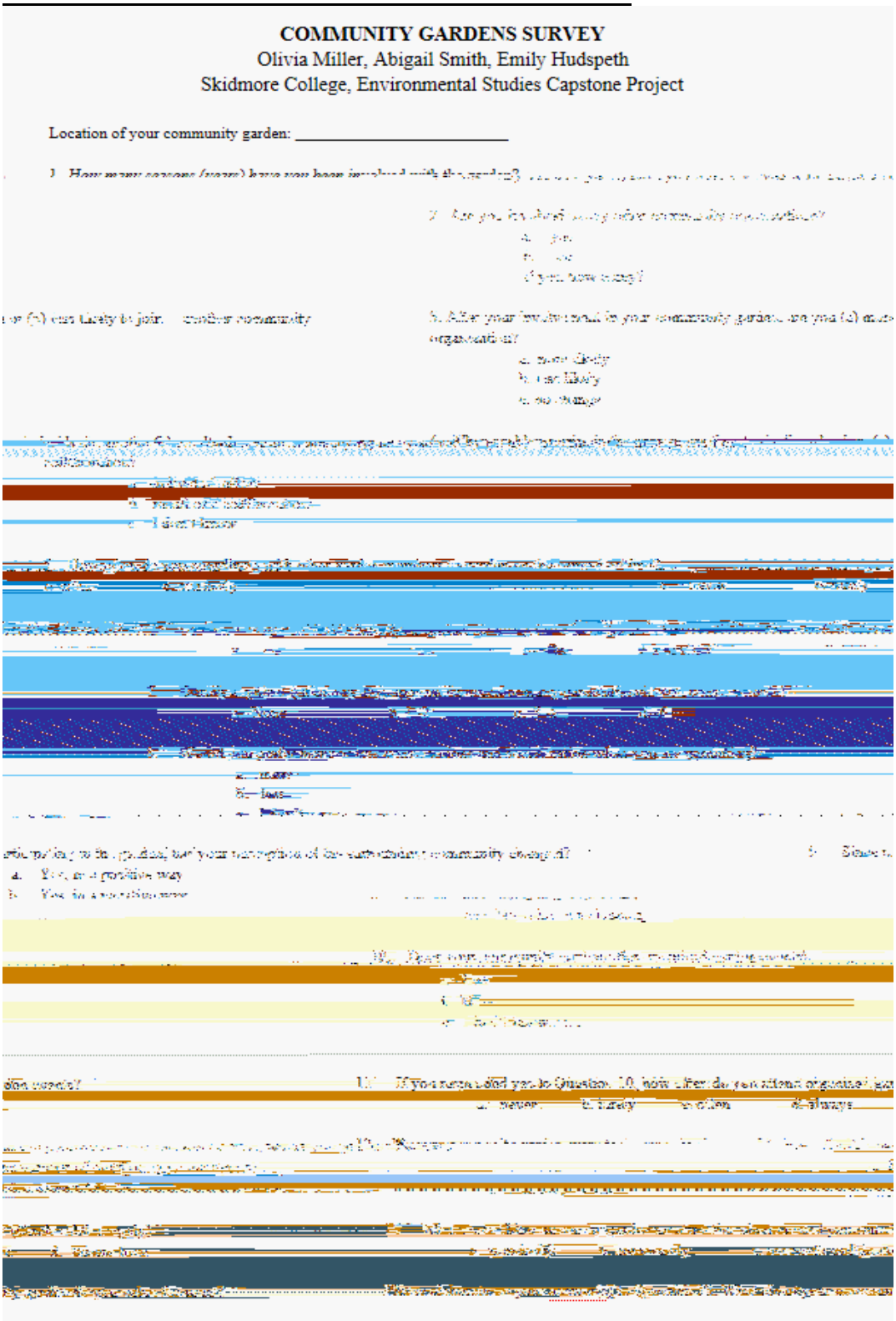
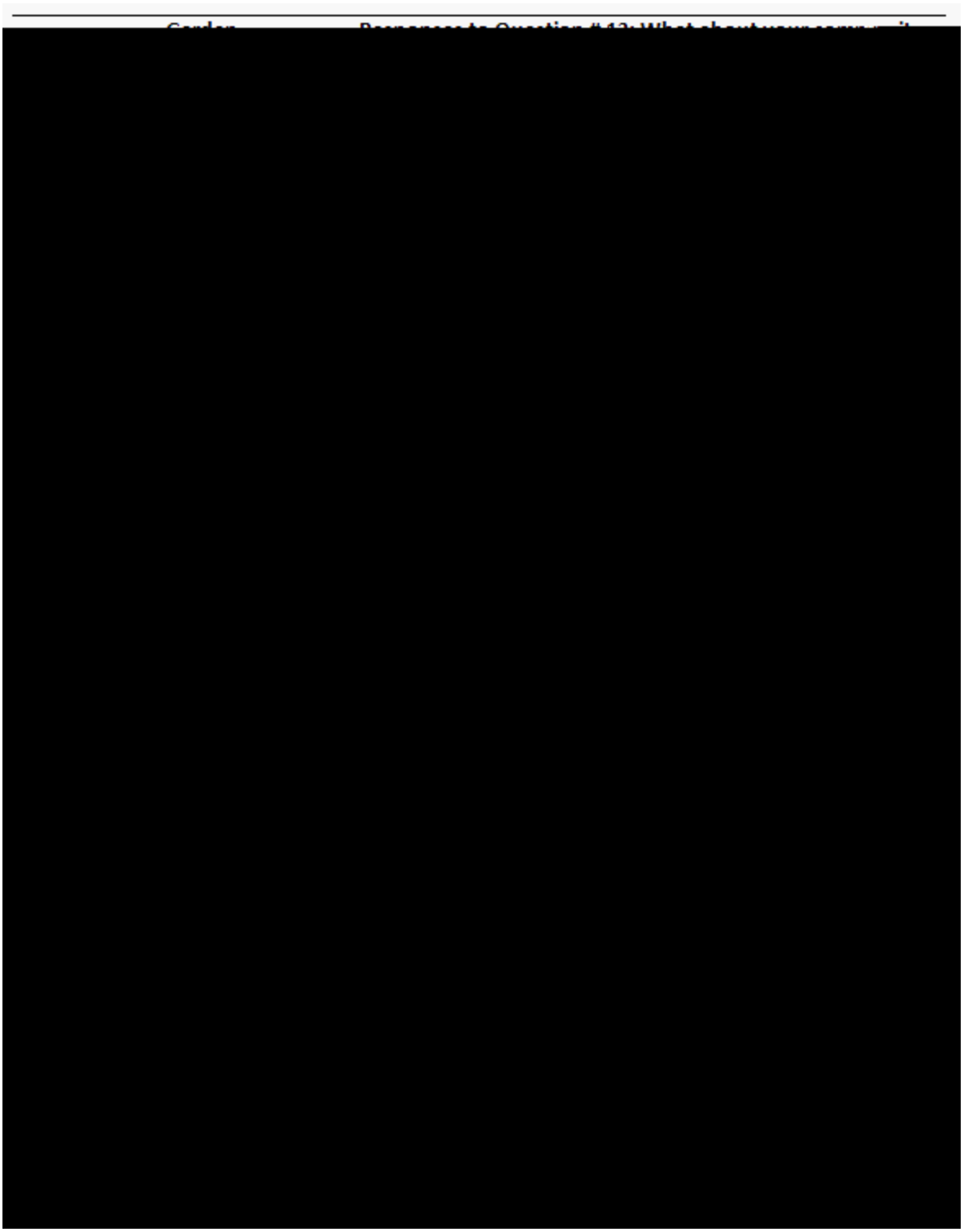
COMMUNITY GARDENS SURVEY

Olivia Miller, Abigail Smith, Emily Hudspeth

Skidmore College, Environmental Studies Capstone Project

Location of your community garden: _____





Note: Some things left out (extraneous sentences, filler words). Bolded parts are most interesting/relevant.

Question (Q)

“ ***—I mean somebody’s new to the area it’s a great way to meet***

So it’s a good way to meet your neighbor, so to speak. They might not be your physical neighbor, but in the garden they’re your neighbor. It’s a great way to have a common theme to talk about if you don’t know

Q: How many gardens?

Q: _____

And then there's other gardens where there's an open space. It's just so popular. So it's hard to find the right piece of land at the right spot at the right time

happy thing in their life at that point and we don't know everything that's going on in people's lives