MEMO

TO: Michael Andrade, P.E.

FROM: Jennifer Conley, PE, PTOE

SUBJECT: **Peer Review of Proposed Marijuana Cultivation Center**
44 Old Worcester Road, Charlton, MA

DATE: **October 1, 2018**

WSP has been asked to review the traffic impacts anticipated from the development of the proposed marijuana cultivation center to be located at 44 Old Worcester Road in Charlton, Massachusetts. The site is currently occupied by Charlton Orchards Farm. WSP is in receipt of the Greenman-Pederson Inc. (GPI) Technical Memorandum dated July 10, 2018 (GPI Memo) as well as plans prepared by Meridian Associates dated August 14, 2018 (Site Plan). WSP has reviewed the documents and finds that the GPI Memo also includes reference to a dispensary proposed along Worcester Road that is not illustrated on the Site Plan.

WSP has reviewed the GPI Memo. Overall, the GPI Memo follows the standard steps of a traffic study. WSP provides comments by section below.

EXISTING CONDITIONS

WSP reviewed the existing conditions section of the GPI Memo including geometry, public transportation, traffic volumes, seasonal adjustment, collisions and vehicle speeds. WSP found the roadway geometry and intersection control to be consistent with available aerial photography (although exact measurements of approach lanes are not possible when pavement markings do not split directional flow). The selection of the intersections to include in the study area was more significant than would have been required for the cultivation center only. The intersections along Route 20 west of Old Worcester Road were likely included in the GPI Memo based on the potential impacts of the Marijuana Dispensary that will be contemplated as a part of a different application.

WSP reviewed the schedule data for Worcester Regional Transportation Authority (WRTA) Bus Route 29 provided in the appendix and found it to be consistent with the data presented in the body of the GPI Memo.

The GPI Memo presented Turning Movement Counts (TMCs) during the weekday PM peak period (4:00 PM to 6:00 PM) and the Saturday midday peak period (11:00 AM to

2:00 PM). Although these are the two peaks of a marijuana dispensary (which was also contemplated in the GPI Memo), the marijuana cultivation center may also experience different peaks during the weekday AM and weekday PM peak periods.

Automatic Traffic Recorders (ATRs) collected daily traffic volumes on Worcester Road (US Route 20) and on Old Worcester Road in the vicinity of the site for both weekday and Saturday volumes.

The GPI letter presents an argument for analyzing the weekday PM and Saturday midday peak hours based on the trip generation (presented in a later section) and the ATR data from Worcester Road, which in combination illustrate that the combined traffic associated with both uses (cultivation and dispensary) is higher during the PM peak and Saturday peak than during the AM peak. In addition, the ATR data illustrates that on Worcester Road, the existing traffic is lower during the AM peak hour than the other peaks. However, the cultivation center is not accessed via Worcester Road.

Because this project, the cultivation center, is being considered separately, WSP did a similar review of the traffic volumes on Old Worcester Road and the trip generation of the cultivation center. Based on the traffic volume data from the ATR on Old Worcester Road, the weekday AM peak hour is the lowest volume of the three peak hours. A review of the trip generation estimated for the cultivation facility (described later in the GPI Memo and correspondingly later in this review), similarly reveals that the weekday PM and Saturday peaks are appropriate for analysis as the AM peak hour volumes are anticipated to be lower than the other two peaks.

WSP has reviewed the seasonal adjustment information provided in the GPI Memo. The count station referred to in the report is not the one that is provided in the appendix. The GPI Memo calculates seasonality based on a single year of data. There are a number of other permanent count stations which include multiple years of data. WSP reviewed the other stations (including one on Route 20) and found that June typically has above average month traffic volumes.

WSP has confirmed that the traffic volumes presented in Figure 2 are representative of the weekday PM and Saturday midday peak hour traffic volumes collected and provided in the appendix.

The GPI Memo reviewed crash data for the most recent five years available (2011-2015) at the study area intersections. WSP has reviewed the MassDOT data and confirmed that the number of crashes listed in the table is representative of the MassDOT data. The text indicates that locations closest to the proposed site have low occurrence and below average crash rates. A review of Table 2, however indicates that although the number of crashes at Old Worcester Road at Morton Station Road is very low (three crashes over five years), the crash rate is significantly higher than the average crash rate for unsignalized intersections.

Vehicle speed data was collected and presented in the GPI Memo. WSP reviewed the data provided for Old Worcester Road and confirmed that the 85th percentile speed is 33 miles per hour as was presented in Table 3.

FUTURE CONDITIONS

The GPI Memo includes data on traffic growth unrelated to the project as well as data regarding the trip generation and distribution of the proposed project trips. WSP has reviewed the traffic growth data unrelated to the project provided in the GPI Memo. Similar to the seasonal adjustment, the closest and most applicable count stations were not included in the calculation. As a result, the growth rate may have been slightly under represented (1.5 percent per year versus 1.0 percent per year). The GPI Memo includes an adjustment of seven years into the future to be consistent with MassDOT standards. However, in the event that this project is operational in only five years, the growth rate provides the appropriate total background traffic growth.

WSP contacted the Town of Charlton and received a list of projects that will generate traffic before 2025. A review of the five generators reveals that none is anticipated to increase traffic in the immediate vicinity of the site. The projects may increase traffic volumes on Route 20 however. WSP verified that the traffic volumes provided in Figure 3 represent the existing conditions increased by one percent per year for seven years.

The GPI Memo includes trip generation data for the proposed cultivation center as well as the dispensary. For the purposes of this review, WSP concentrated on the trip generation of the cultivation center only. Trip generation information is typically based on the Institute of Transportation Engineers (ITE) Trip Generation Manual; however, this is a relatively new land use type and data is not available. The GPI Memo provides information on the number of employees as well as deliveries expected at the site. Because the assumptions were conservatively high (ie. all 150 employees per shift will arrive in same hour and will each drive separately to the site), WSP concurs that the trip generation estimates of 305 peak hour trips is likely conservatively high based on the number of employees estimated at the site. The GPI Memo also provided ITE trip generation data based on LUC 140, Manufacturing, for comparison purposes. The ITE data was significantly lower than the data specifically developed for this site.

The GPI Memo indicated that cultivation trips were distributed based on existing commuting patterns for workers employed in Charlton. WSP spot checked the data provided in the appendix and found that the methodology used to calculate the trip distribution followed industry standards. WSP would have assigned some Charlton based trips via Route 20 rather than only via Morton Station or North Main Street resulting in additional trips on Old Worcester Road to the east of the site. WSP confirmed that the trips were distributed according to the data provided in the appendix and added to the No Build traffic volumes to result in the Build traffic volumes presented in Figure 5 in the GPI Memo.

The available sight distances were reviewed in the GPI Memo and compared to industry standards. WSP has reviewed the findings and agrees that the sight lines along Old Worcester Road are limited due to grade right at the edge of pavement on the north side between L Turner Drive and Morton Station Road. WSP has reviewed the sight lines in the field and noted a significantly shorter intersection sight distance than reported in the GPI Memo. As such, the available sight lines observed in the field and the minimum required should be illustrated on a graphic of the site plan overlaid onto an aerial for clarity as to the limitations and make it clear to the applicant what grading needs to occur to meet the minimums. The elevations of the lines of sight from the site driveway should be provided to more clearly illustrate where the grading will need to occur.

The high crash occurrence noted at Old Worcester Road and Morton Station Road may be due in part to limited sight lines at that location. The modification of the grade on the subject site will likely have a positive effect on the safety at that location as well.

CAPACITY AND QUEUE ANALYSIS

WSP reviewed the intersection analysis results provided in the GPI Memo and the associated backup data provided in the appendix. WSP spot checked the analysis sheets for the intersections likely affected by the cultivation center to confirm that the geometrics and volumes were entered appropriately based on the data provided in the GPI Memo.

As outlined above, the GPI Memo analyzes the impact of both the cultivation center and the dispensary. As such, the results presented in Table 7 include that additional traffic. As shown the unsignalized intersections of Old Worcester Road at L Turner and Worcester Road at Morton Station Road are both anticipated to continue operating at acceptable levels of service as there is adequate capacity available on Old Worcester Road and at the intersections themselves. The analysis presented for Worcester Road at Old Worcester Road identifies some movements that are currently operating deficiently (LOS F) that will be exacerbated by the proposed traffic. The GPI Memo has identified improvements to the traffic signal timing that will mitigate the deficient operation. The remaining intersection analyses were not reviewed as they were not relevant to the current proposal.

CONCLUSIONS

WSP finds that the methodology used to determine the traffic impacts associated with the proposed marijuana cultivation center follows industry standards. Although WSP has found a few discrepancies, it is unlikely that modifying growth factors or other minor changes would significantly alter the results. The one remaining issue is safety. There is a high crash occurrence in the immediate site vicinity and limitations to the available sight lines (WSP measured the sight lines to be even more deficient than presented in the GPI Memo). Additional information should be illustrated regarding

the sight lines that are currently available and the anticipated sight line profile to confirm that the recommendations are met. Although there were only a few crashes at the intersection of Old Worcester Road and Morton Station Road, that number is high in relation to the extremely low traffic volume at that intersection and results in a crash rate above the MassDOT average for unsignalized intersections. A brief review of the safety at that location also should be provided.