FINAL (UPDATE) Material Transportation Plan
Arecibo Observatory
PR-625 Bo. Esperanza
Arecibo, Puerto Rico 00612

Prepared For:
National Science Foundation
Division of Astronomical Sciences
2415 Eisenhower Avenue
Alexandria, VA 22314

Prepared By:

Thornton Tomasetti
301 Howard Street, Suite 1030
San Francisco, CA 94105

4716 Hilltop Rd
Greensboro NC 27407

LANGAN
135 Main Street, Suite 1500
San Francisco, California 94105

CSAGROUP EST • 1956
1511 Ponce de Leon Avenue
Suite 23 San Juan, Puerto Rico 00909

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TABLE OF CONTENTS

ATTACHMENTS

LIST OF FIGURES

DRAFT

1.0 EXECUTIVE SUMMARY

This procedure has been developed to document the proposed means and methods for the management, control, and transportation of material from the Arecibo Observatory to ~~PR-22~~Ponce for transportation to its destination. Major suppliers bringing material to the site will also adhere to the means and methods listed within this plan.

This plan is a general overview of the means and methods. Materials generated from the site will be transported for various purposes such as recycling (e.g. metals), landfill disposal of waste or refuse materials (e.g. comingled and other non-hazardous materials), and soils (non-hazardous); or to be reused or repurposed. Materials may also enter the site for repairs or work needed to be performed at the site through the same routes. Specialized loads and materials will be documented with load specific plans if required.

Industry standard hauling vehicles such as roll-off style trucks with a 40 or 60 yard can attached (secured per industry standard) will be used. Truck trips will occur during off-peak hours when practical but are expected Monday through Saturday between 7:00 AM and 4:00 PM. Peak truck traffic can occur between 8:00 AM to 10:00 AM and 1:00 PM to 3:00 PM. NSF and UCF will minimize any impact to school bus traffic, and will coordinate with local schools if necessary. We anticipate that truck traffic will continue through June 2021 or shortly thereafter.

A road conditions survey has been performed to determine road types and baseline road conditions on the route from the Observatory to PR-22. A visual road survey will be performed daily at the end of each shift (when truck hauling occurs) to verify no load debris or damage was caused during that work shift. At the end of the hauling period for this project, another road conditions survey will be performed to confirm that there were no effects on the road conditions caused by the truck traffic. NSF and the project team will assess any impacts to the road conditions and address appropriately.

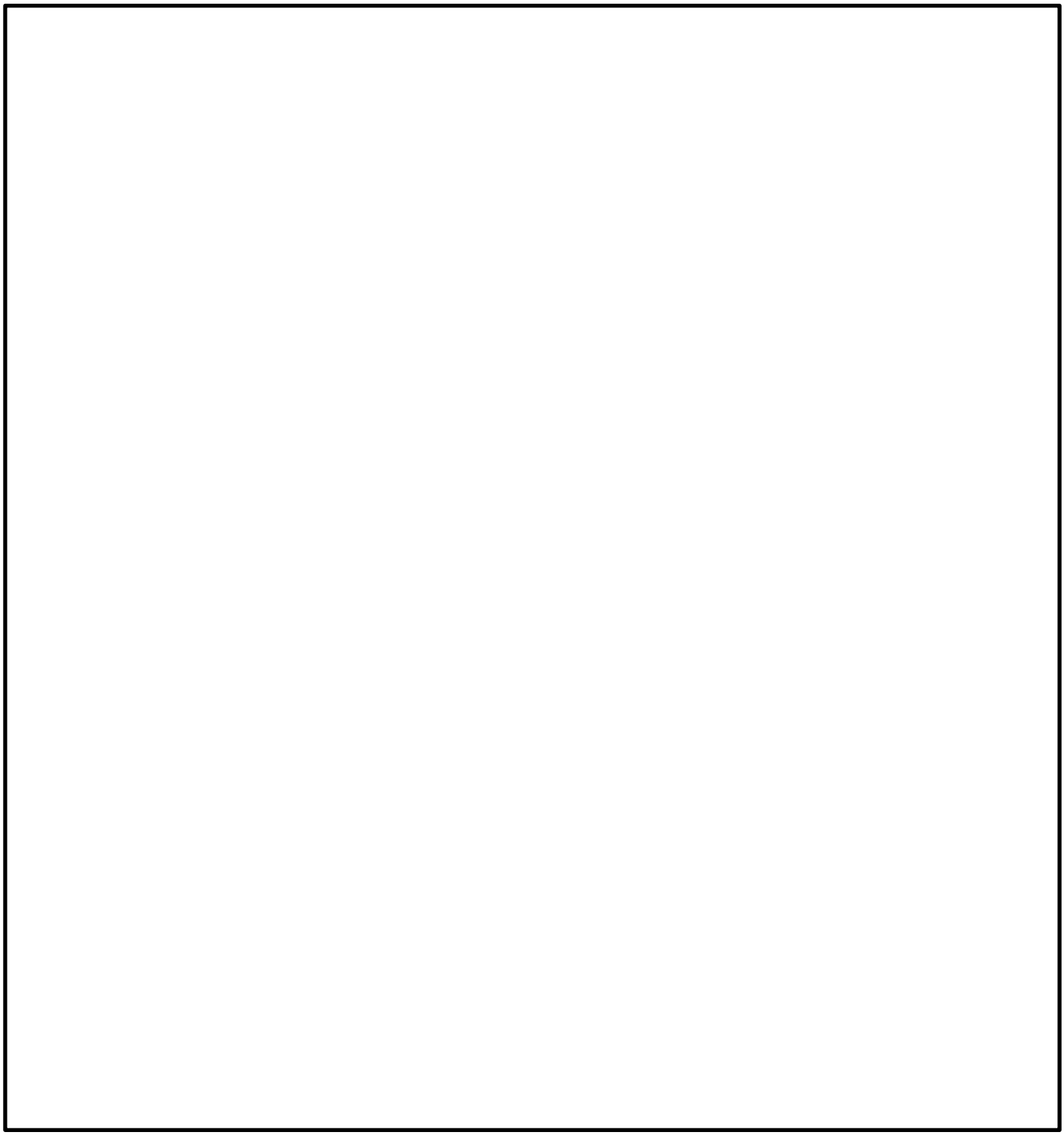
To facilitate coordination and compliance with local procedures and regulations, all vendors used for transportation will be procured locally, to the extent practicable, and will have the experience, certifications, and knowledge of local and state transportation regulations.

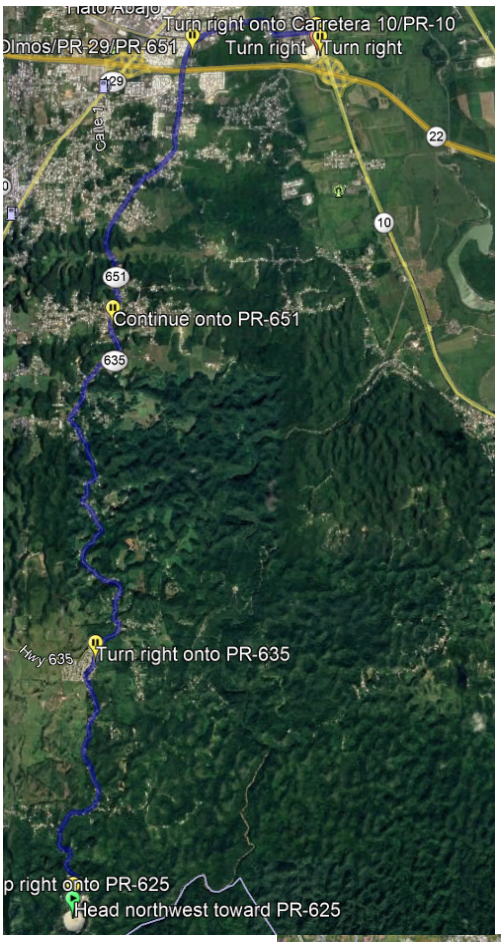
1.1 Environmental Health & Safety

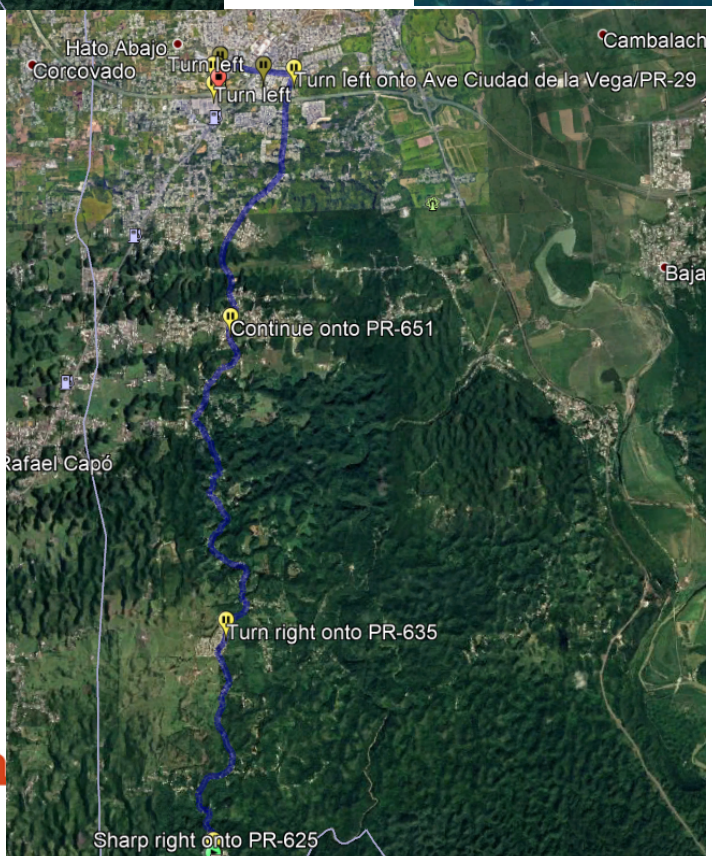
All work defined within this procedure will be completed in accordance with DHG's Health & Safety Plan, specifically section 45 Waste Material Management.

2.0 GENERAL HAULING ROUTE

This plan includes a general route from the Observatory to ~~PR-22~~Ponce. This route is outlined in Figure 1. Route Overview and Road Names with detailed turn directions in Figure 2. Turn Overviews. As final destinations are selected and approved (landfill, scrap yard, etc.) additional routes will be selected and reviewed. Figure 3. Alternate Transportation Routes (figure from NSF July 27, 2017 Final EIS report) outlines alternate transportation routes if the primary route is not used. These alternate routes were first outlined as potential haul routes in the NSF 2017 Final Environmental Impact Statement for the Arecibo Observatory (EIS). All materials will be hauled to recycling facilities and landfills in Puerto Rico.




Turn right onto Carretera 10/PR-10
Turn right
Turn right
Continue onto PR-651
Turn right onto PR-635
Head northwest toward PR-625


Hato Abajo
Corcovado
Turn left
Turn left
Turn left onto Ave Ciudad de la Vega/PR-29
Cambalach
Baja
Continue onto PR-651
Turn right onto PR-635
Sharp right onto PR-625

Road	Road #	Length KM	Road Type
Carretera al Observatorio de Arecibo **(Start at AO)**	PR-625	3.98	Tertiary Rd
Carretera Alcalde Frankie Hernandez Jove	PR-635	0.56	Tertiary Rd
Carretera Alcalde Frankie Hernandez Jove/Camino Esperanza	PR-635	5.56	Tertiary Rd
Carretera Profesor Roberto F Rexach Benitez/Camino Dominguito	PR-651	3.97	Tertiary Rd
Av. Francisco Jimenez Gonzalez/ Av. Cotto	PR-651	0.39	Tertiary Rd
Avenida Ciudad de la Vega	PR-29	0.87	Tertiary Rd
~~Avenida San Luis~~Pso Los Olmos **(Connection to PR-~~22~~10)**	PR-129	1.22	Primary Rd

Figure 1. Route Overview and Road Names

Road	Road #
Carretera al Observatorio de Arecibo **(Start at AO)**	PR-625
Turn right onto Carretera Alcalde Frankie Hernandez Jove	PR-635
Turn left onto Carretera Profesor Roberto F Rexach Benitez/Camino Dominguito	PR-651
Turn right onto Pso Los Olmos	PR-29
Turn right onto Carretera 10/PR-10	PR-10
Continue onto PR-123	PR-123
Turn left onto PR-5517	PR-5517
Turn left onto PR-5516	PR-5516
Turn right onto PR-10	PR-10
Turn right onto PR-52	PR-52
Turn right onto PR-12	PR-12
Turn right onto Calle Puerto Viejo	PR-123
(Finish at Destination)	

Figure 2. Turn Overviews

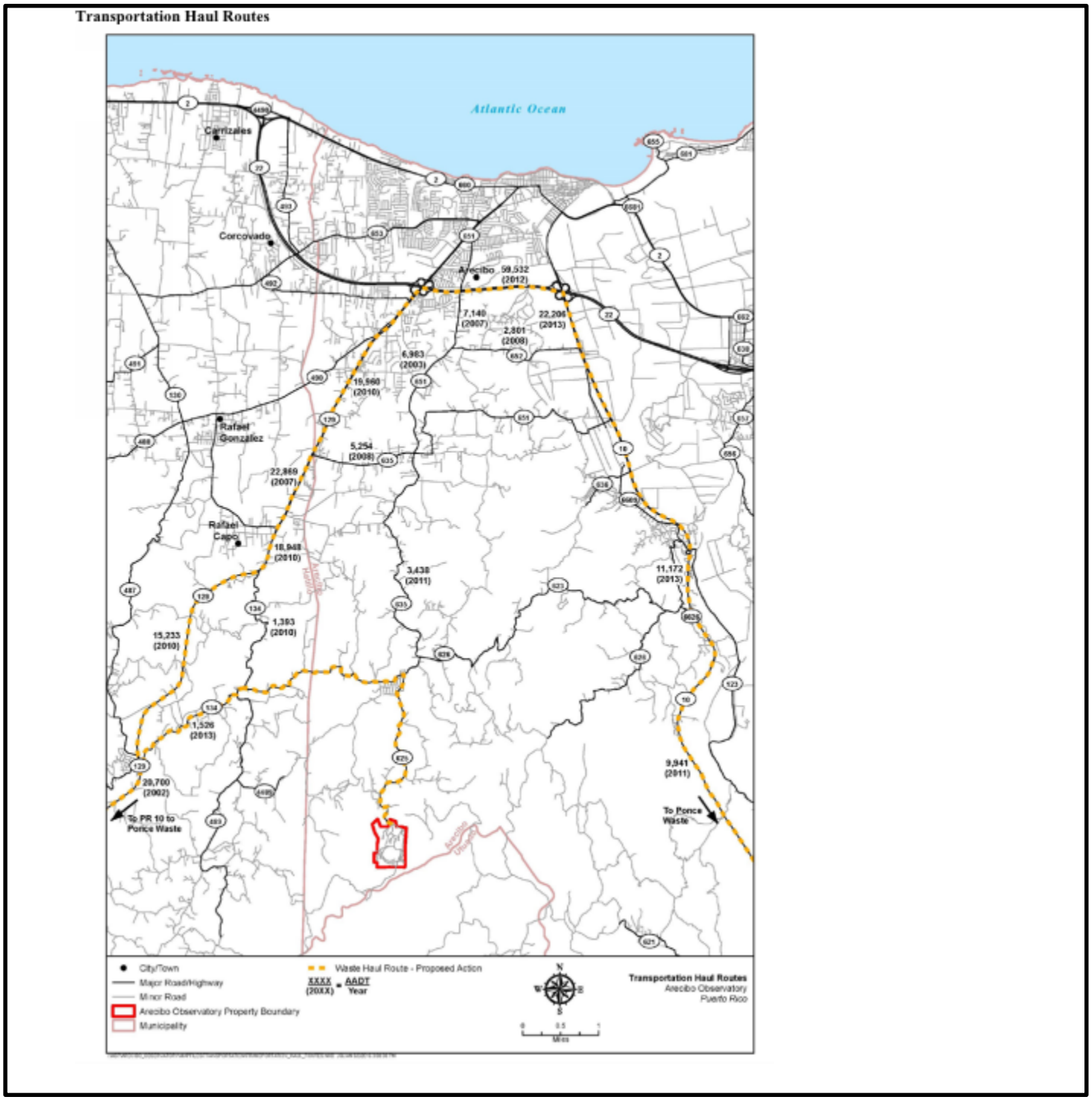


Figure 3. Alternate Transportation Routes (figure from NSF July 27, 2017 Final EIS report)

3.0 PROCEDURE

As material is generated and approved for removal by the Observatory team, it will be hauled from the Observatory to PR-22. Upon arrival at PR-22 each load will continue to its final destination depending on load. The goal of this procedure is to establish a baseline for all loads disembarking from the Observatory. Specialized loads will have detailed procedures when necessary. The following is a non-inclusive list of typical categories of materials that are anticipated to be generated and transported during the scope of the project:

- Recyclable Materials (metals)
- Waste/Refuse Materials (comingled materials, non-asbestos materials deemed unrecyclable without initial or secondary processing, sorting and screening)
- Soils
- Reusable Materials including aggregates that can be processed and reused as a stabilizing or fill material onsite. The intent is to maintain the majority of this material onsite. Excess reusable material may be transported offsite.

The procedure for the management, control, and disposition of these materials are detailed in the Waste Management plan. This transportation plan is specific to the actual movement of the material from the jobsite. During the transportation of material, DHG will be responsible for communication between field personnel and any subcontractors regarding the transportation requirements. The on-site Project Superintendent will be the designated Transportation Manager.

For aide in the coordination with local procedures and regulations, all vendors used for transportation with be local with the experience, certifications, and knowledge of local and state transportation regulations. This selection of vendors will be critical to adhering to local regulations. Current potential vendors include Central Industrial Service, ConWaste, and JJW metals. Additional vendors will be approached as needed. All subcontractors are required to identify, maintain proper control, and provide documentation for the transportation of materials described in this plan.

3.1 Safety

All material will be loaded by DHG personnel onto the truck for transportation. Upon loading, the driver of each truck will perform all tie downs and a pre-trip inspection. This inspection includes a walk around

to verify all loads are secured and covered (via tarp or other industry standard). Each driver will be notified of all potential height restrictions and overhead obstructions prior to delivery. All vehicles used for material transport will comply with local standards for height, width, length and weigh restrictions. If at any time an oversized load is required, our team will coordinate with the appropriate transportation authority to obtain the necessary permits. Oversized loads will be escorted by a lead flagger vehicle to assist in traffic control and road clearance.

A visual road survey will be performed daily at the end of each shift to verify no load debris or damage was caused during that work shift.

3.2 Hauling Hours

Transportation of materials and work vehicles will occur during off-peak hours when practical. Hauling can be expected Monday – Saturday 7 a.m. – 4 p.m., with peak traffic between hours of 8 – 10 a.m. and 1 - 3 p.m. To minimize the impacts of the demolition hauling on local residents, we will inform NSF and UCF of our hauling operations to coordinate and notify local public schools to ensure hauling and haul routes do not adversely affect school bus traffic. We anticipate that truck traffic will continue through June 2021 or shortly thereafter.

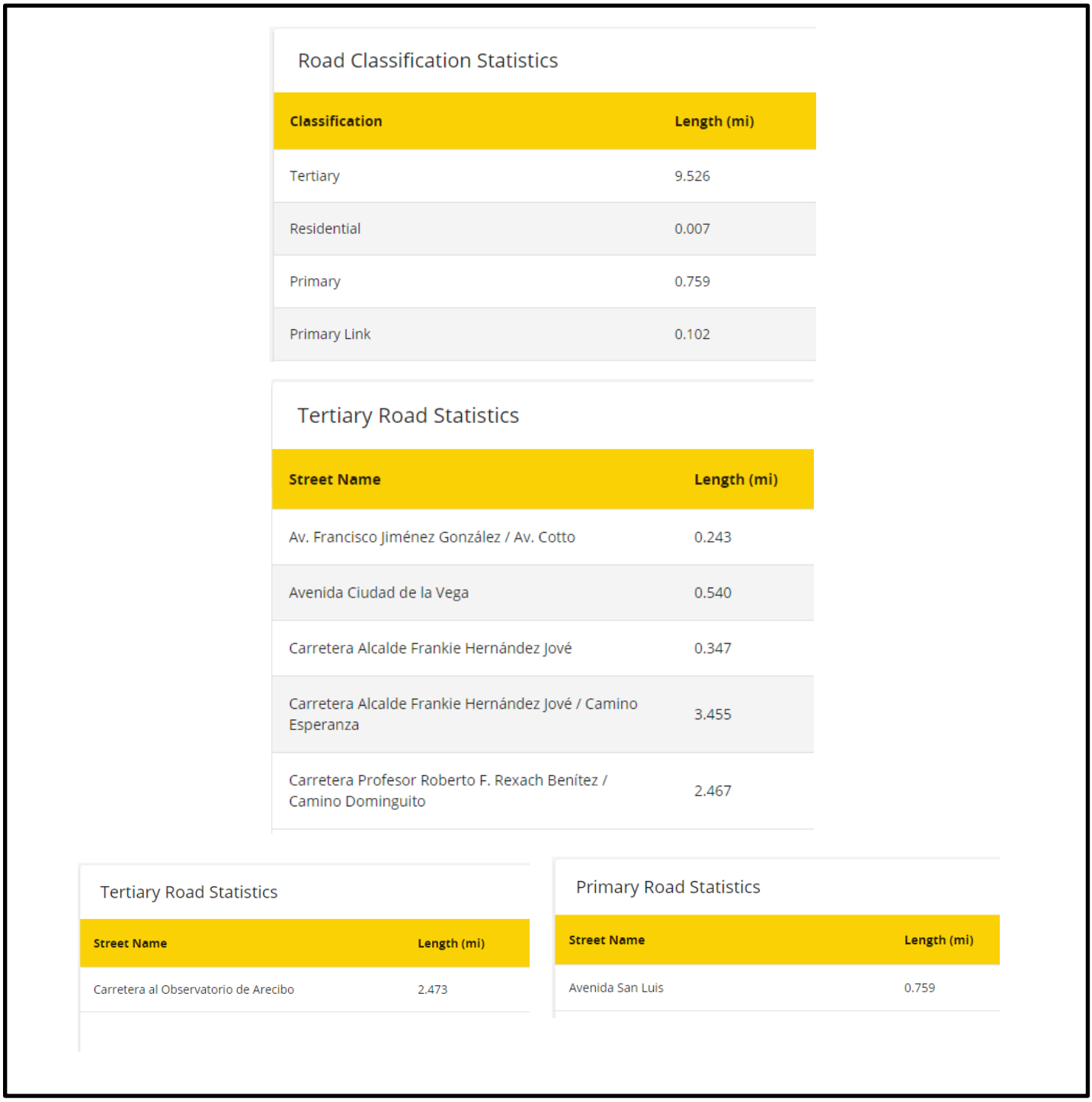
3.3 Hauling Vehicles.

Transportation of materials will occur with industry standard hauling vehicles. For soil removal a roll-off style truck with a 40-yard can will be used. These vehicles have integrated tarps to safely cover each load. For scrap material, a 60-yard can will be used on a roll-off style truck. These loads will be secured via industry standard.

3.4 Road Survey

To confirm that no damage is caused due to hauling activities, a survey of the existing roads along the travel path from the Observatory to PR-22 has been performed. This survey will serve as a baseline of the current road conditions prior to hauling of material from the Observatory. Upon completion of hauling from the project, a second survey will be performed to compare the road conditions. Coordination between the project team, NSF, and the appropriate transportation authority will occur to determine the appropriate mitigation measures to be implemented in response to road damage.

Part of the survey includes the road type description along with the length of each road type. See Figure 4. Road Summary below for a list of this data.



Road Classification Statistics

Classification	Length (mi)
Tertiary	9.526
Residential	0.007
Primary	0.759
Primary Link	0.102

Tertiary Road Statistics

Street Name	Length (mi)
Av. Francisco Jiménez González / Av. Cotto	0.243
Avenida Ciudad de la Vega	0.540
Carretera Alcalde Frankie Hernández Jové	0.347
Carretera Alcalde Frankie Hernández Jové / Camino Esperanza	3.455
Carretera Profesor Roberto F. Rexach Benítez / Camino Dominguito	2.467

Tertiary Road Statistics

Street Name	Length (mi)
Carretera al Observatorio de Arecibo	2.473

Primary Road Statistics

Street Name	Length (mi)
Avenida San Luis	0.759

Figure 4. Road Summary

3.5 Tracking Log

In accordance with the Waste Management plan, a tracking log of all materials leaving the project site will be tracked and compiled (at a minimum) weekly. This log will identify the material being hauled, estimated load, transporter, destination, BOL (if applicable), and Waste Profile type (if applicable). At the completion of the project a summary of the load hauled will be produced. Figure 5. Waste Tracking Log below is a template of the log to be used.

Waste Tracking Log

Arecibo

D.H. GRIFFIN Companies Thornton Tomasetti

Date Shipped Offsite	Load #	Waste Stream	Waste Name, Haz Class, UN or NA	Waste Request (WR) No.	Profile #	Disposal Facility	Approximate Volume or Weight	Manifest No.	Container Type (Dump Truck, Rolloff, Drum, etc)

Figure 5. Waste Tracking Log