

NO HOLDS BARRED GIS

Post-Maria Data Collection & Management for
Departamento de Educación de Puerto Rico
John W. McEwen, Ph.D., GISP

4/12/2018



SAFETY MOMENT



AGENDA

Introduction

Purpose

Methods

Data

Technology

Products

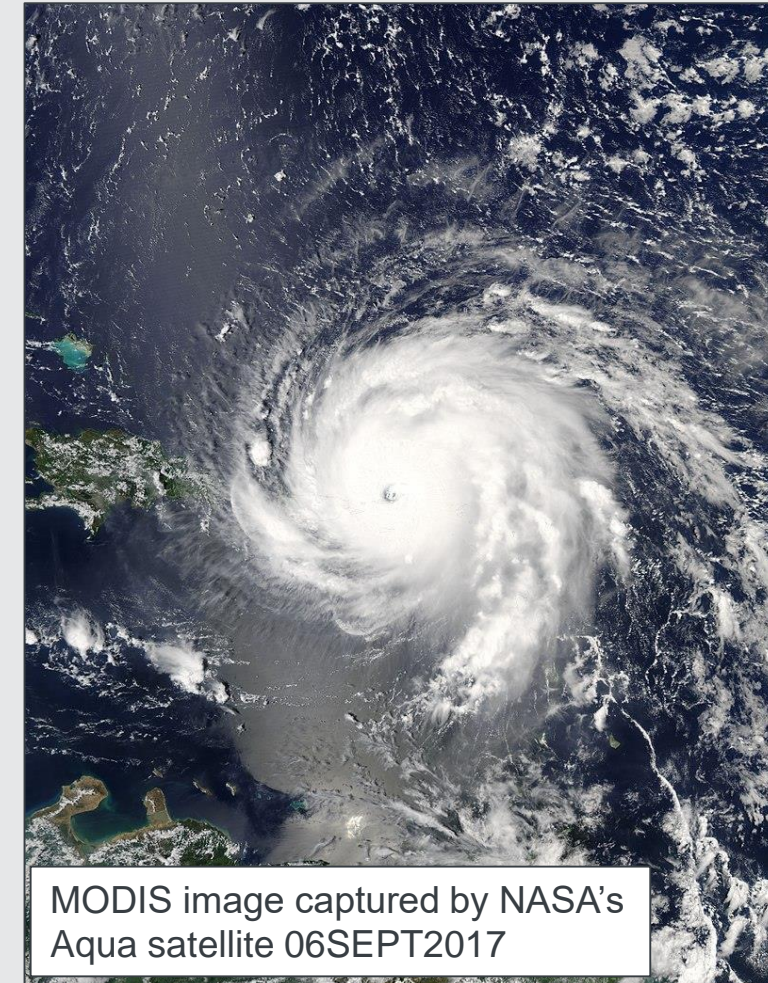
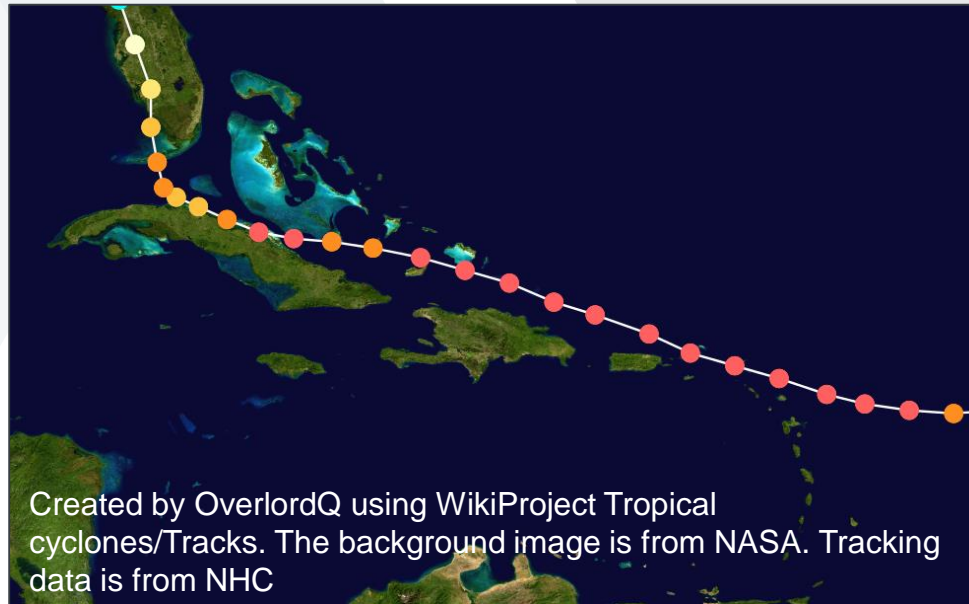
Future Direction



INTRODUCTION

Hurricane Irma

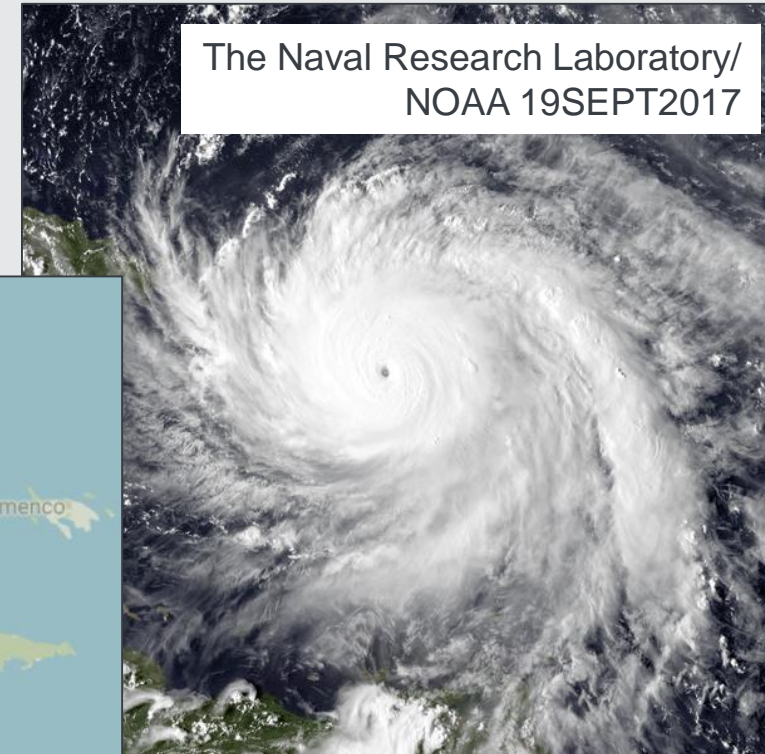
- ▶ Category 5 Hurricane Grazed Northeast Puerto Rico
 - Over 1 million without power
 - 4 died during the storm
 - Islands of Culebra and Vieques primarily affected



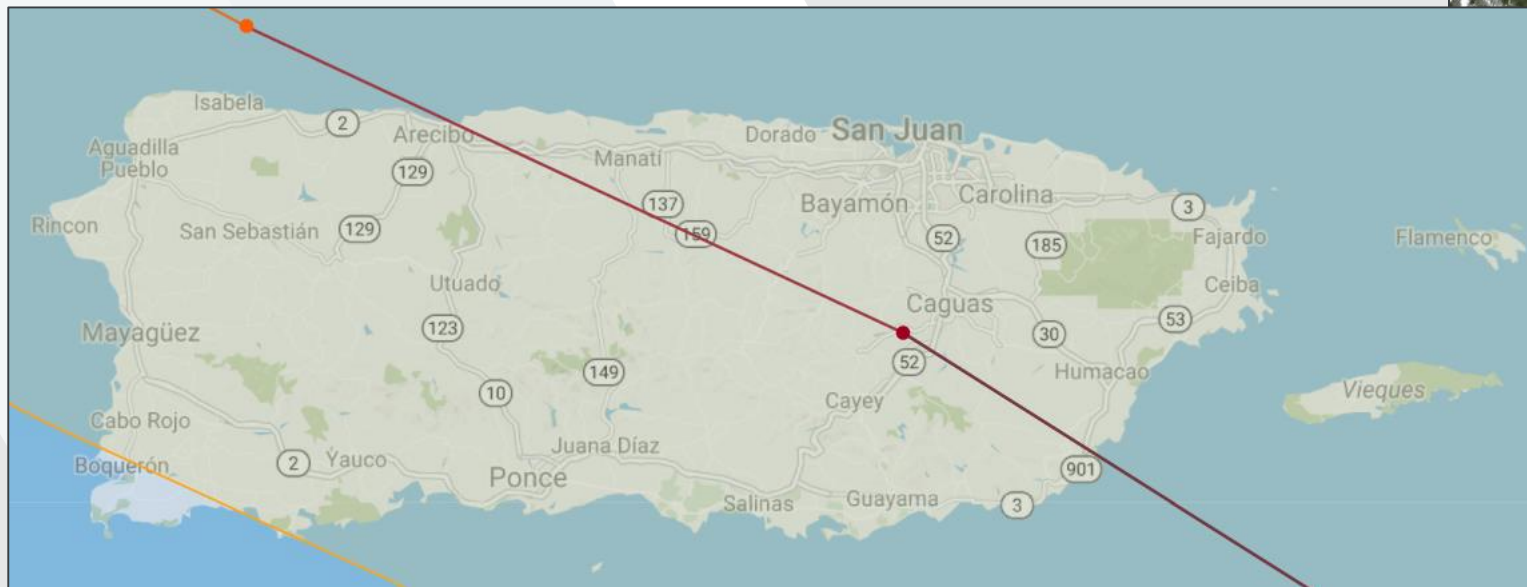
INTRODUCTION

Hurricane Maria

- ▶ Category 5 Hurricane Directly Across Puerto Rico SE→NW
 - Entire island's power grid went down affecting 3.5 million
 - Over 120 dead or missing
 - Nearly complete infrastructure rebuild required



The Naval Research Laboratory/
NOAA 19SEPT2017



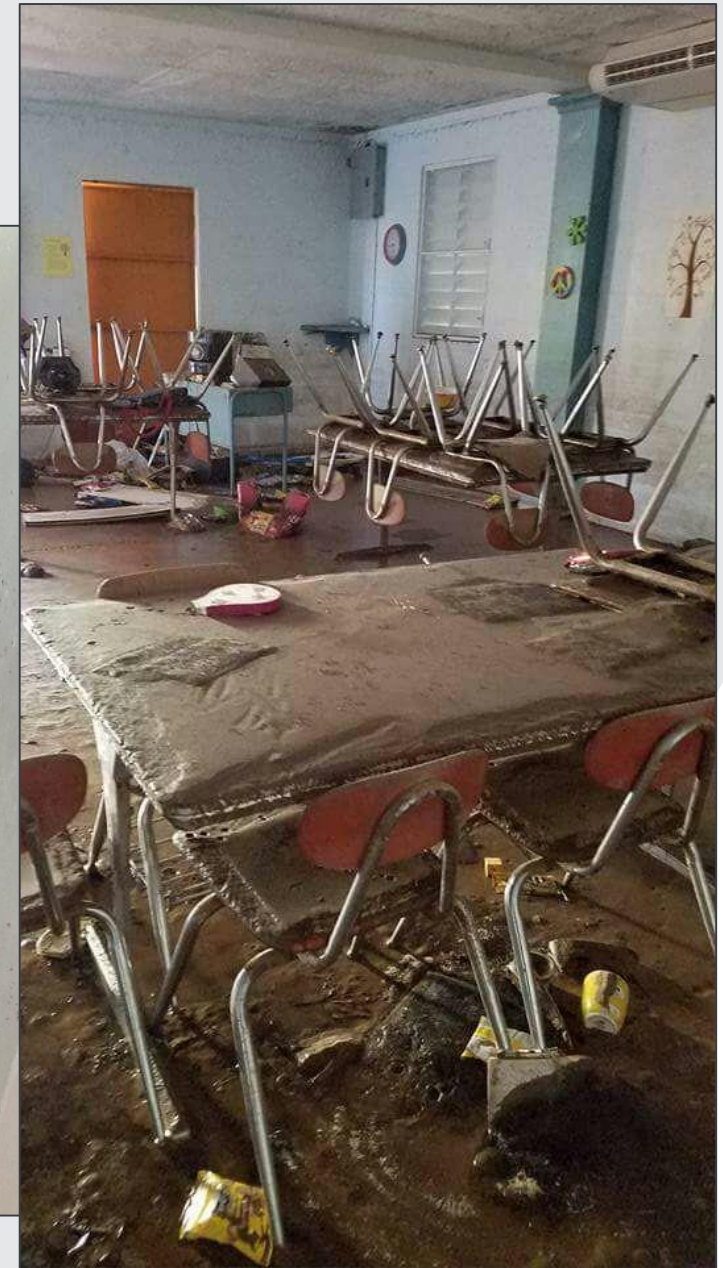
EXAMPLE OF DAMAGED SCHOOL



EXAMPLE OF DAMAGED SCHOOL

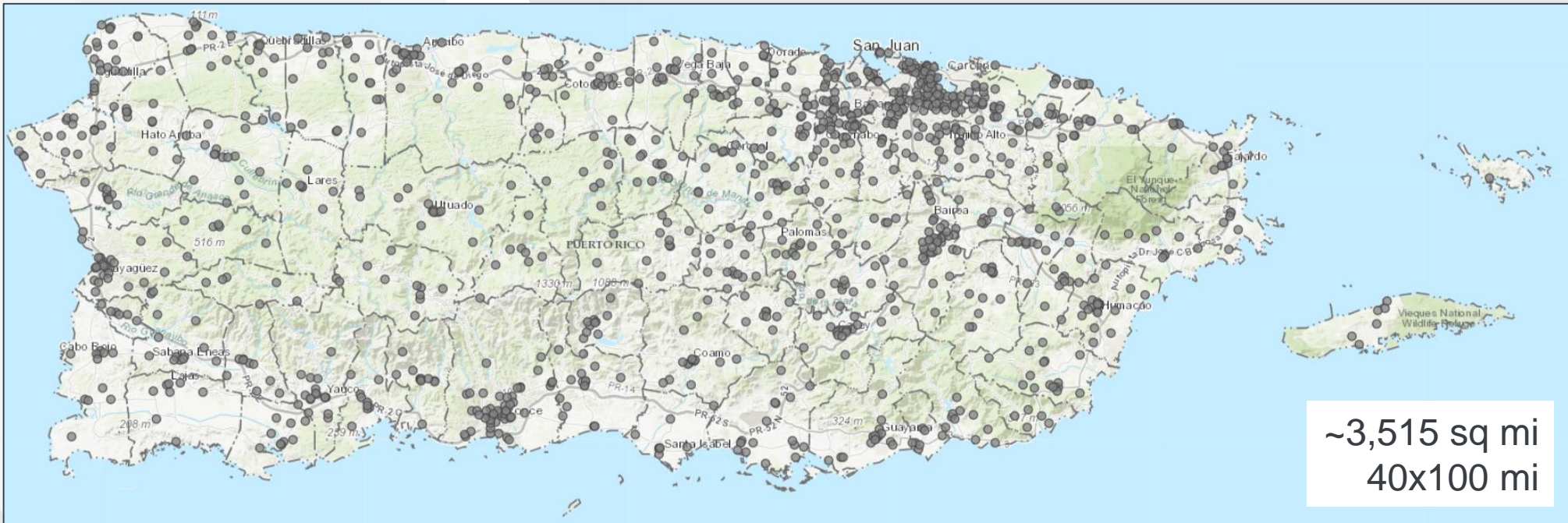


EXAMPLE OF DAMAGED SCHOOL



PURPOSE

Perform Health & Safety Inspections and Building Assessments at 1,131 public K-12 schools in the Commonwealth of Puerto Rico



PURPOSE

Stakeholders

- ▶ Departamento de Educación de Puerto Rico
 - Return schools to working status as soon as possible
 - Running water, septic/waste water, electricity (generators or power distribution)
 - Overall building safety
- ▶ United States Government
 - U.S. Army Corps of Engineers (USACE) – Building Engineering Assessments
 - Federal Emergency Management Agency (FEMA) – Data to support Public Assistance requests
 - U.S. Army Engineer units – Performing temporary repair work

PURPOSE

Stakeholders

- ▶ **CSA Group & APTIM Disaster Management Services**
 - Provide Public Assistance consulting to Commonwealth (state) agencies
 - Data collection & management to support Project Work Orders submitted to FEMA
 - GIS Manager, Data Reporters, Web Developers, Programmers
- ▶ **Schools, Communities, Teachers, & Students**
 - Several hundred schools closed & consolidated within last two years
 - Nobody wanted their schools closed
 - Minimally damaged schools served as community shelters
 - Invested own time and money clearing/removing debris, providing generators and potable water, providing meals to students

DATA

Facility Evaluation (Site) Form- Version 1a (15 OCT 17)		OVERALL RATING	YELLOW
Inspector(s) name: _____			
Inspection Date: _____ (DD/MM/YYYY)		Inspection Time: _____	
Type of Facility	School Code		
Facility name: _____			
Facility Address: _____			
Latitude/Longitude: _____			
Building contact: _____		(Name, phone #)	
Number of Buildings: _____			
General:			
	Yes	No	Comments
The Facility area were Flooded			
One or more Buildings were flooded			
Other Water Damage In Facility			
Services:			
Potable Water Service Available			
Potable Water Cistern Available			
Sewer Service Available			
Septic Tank Service available			
Electrical Power Service Available			
Generator Available			
Gas (LP) Storage Tank Intact			
Class Room Ventilation:			
Adequate ventilation in classrooms			
Air condition system operating			
Accesses			
Safe Access/ Egress from road to building			
	Minor/None	Moderate	Severe
Perimeter Fences/Walls:			
Damage to Perimeter Fence			
Damage to Retaining Walls or Local Slopes			
Overall Areas:			
Damage/Hazards In Recreational Areas			
Damage/Hazards In Parking Areas			
Falling Hazards In Play Areas and Walkways			
Standing Water In Play Areas and Walkways			
Presence of Hazards/Debris/ Trees			
Downed Power Lines or Electrical Hazards			
Lunch Room:			
	Yes	No	
Cooking Equipment			
Refrigerated and Dry Food Storage			
Operational Exhaust Fan			
Fire Suppression System			
Screens			
Additional Comments:			

DATA

Facility Evaluation (Site) Form- Version 1a (15 OCT 17)		OVERALL RATING	YELLOW
Inspector(s) name:			
Inspection Date:	(DD/MM/YYYY)	Inspection Time:	
Type of Facility		School Code	
Facility name:			
Facility Address:			
Latitude/Longitude:			
Building contact:	(Name, phone #)		
Number of Buildings:			
General:	Yes	No	Comments
The Facility area were Flooded			
One or more Buildings were flooded			
Other Water Damage In Facility			
Services:			
Potable Water Service Available			
Potable Water Cistern Available			
Sewer Service Available			
Septic Tank Service available			
Electrical Power Service Available			
Generator Available			
Gas (LP) Storage Tank Intact			

DATA

Class Room Ventilation:				
Adequate ventilation in classrooms				
Air condition system operating				
Accesses				
Safe Access/ Egress from road to building				
	Minor/None	Moderate	Severe	Comments
Perimeter Fences/Walls:				
Damage to Perimeter Fence				
Damage to Retaining Walls or Local Slopes				
Overall Areas:				
Damage/Hazards In Recreational Areas				
Damage/Hazards In Parking Areas				
Falling Hazards In Play Areas and Walkways				
Standing Water In Play Areas and Walkways				
Presence of Hazards/Debris/ Trees				
Downed Power Lines or Electrical Hazards				
Lunch Room:	Yes	No		
Cooking Equipment				
Refrigerated and Dry Food Storage				
Operational Exhaust Fan				
Fire Suppression System				
Screens				
Additional Comments:				

Page 2

Building name: _____ Inspector ID: _____

Sketch

Make a sketch of the damaged building in the space provided.
Indicate damage points.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Estimated Building Damage (excluding contents)

- ☐ None
- ☐ > 0 to < 1%
- ☐ 1 to < 10%
- ☐ 10 to < 30%
- ☐ 30 to < 70%
- ☐ 70 to < 100%
- ☐ 100%

Posting

If there is an existing posting from a previous evaluation, check the appropriate box.

Previous posting: ☐ INSPECTED ☐ RESTRICTED USE ☐ UNSAFE Inspector ID: _____ Date: _____

If necessary, revise the posting based on the new evaluation and team judgment. *Severe* conditions endangering the overall building are grounds for an Unsafe posting. Local *Severe* and overall *Moderate* conditions may allow a Restricted Use posting. Indicate the current posting below and at the top of page one, whether the posting has been revised or not.

☐ **INSPECTED** (Green placard) ☐ **RESTRICTED USE** (Yellow placard) ☐ **UNSAFE** (Red placard)

Record any use and entry restrictions exactly as written on placard: _____

Number of residential units vacated: _____

Further Actions

Check the boxes below only if further actions are needed.

☐ Barricades needed in the following areas: _____

☐ Engineering Evaluation recommended: ☐ Structural ☐ Geotechnical ☐ Other _____

☐ Substantial Damage determination recommended

☐ Other recommendations: _____

ATC-45 Detailed Evaluation Safety Assessment Form

Inspection

LAT:

LON:

Inspector ID:

Inspection date:

Affiliation:

Inspection time:

☐ AM ☐ PM

Final Posting
from page 2

- ☐ Inspected
☐ Restricted Use
☐ Unsafe

Building Description

CODE:

Building name:

Address:

Building contact/phone:

Number of stories:

"Footprint area" (square feet):

Number of residential units:

Type of Building

- ☐ Mid-rise or High-rise
☐ Low-rise multi-family
☐ Low-rise commercial

- ☐ Pre-fabricated
☐ One- or two-family dwelling
☐ Other:

Primary Occupancy

- ☐ Dwelling
☐ Other residential
☐ Public assembly
☐ Emergency services

- ☐ Commercial
☐ Offices
☐ Industrial
☐ Other:
☐ Government
☐ Historic
☐ School

Evaluation

Investigate the building for the conditions below and check the appropriate column. There is room on the second page for a sketch.

	Minor/None	Moderate	Severe	Comments
Overall hazards:				
Collapse or partial collapse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Building or story lean or drift	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Fractured or displaced foundation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Structural hazards:				
Failure of significant element/connection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Column, pier, or bearing wall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Roof/floor framing or connection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Superstructure/foundation connection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Moment frame	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Diaphragm/horizontal bracing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Vertical bracing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Shear wall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Nonstructural hazards:				
Parapets, ornamentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Canopy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Cladding, glazing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Ceilings, light fixtures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Stairs, exits, access walkways, gratings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Interior walls, partitions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Mechanical & electrical equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Elevators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Building contents, other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Geotechnical hazards:				
Slope failure, debris impact	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Ground movement, erosion, sedimentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Differential settlement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Page 2

Sketch

Make a sketch of the damaged building in the space provided. Indicate damage points.

Estimated Building Damage
(excluding contents)

- ☐ None
- ☐ > 0 to < 1%
- ☐ 1 to < 10%
- ☐ 10 to < 30%
- ☐ 30 to < 70%
- ☐ 70 to < 100%
- ☐ 100%

[illegible]

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☐ Engineering Evaluation recommended: ☐ Structural ☐ Geotechnical ☐ Other _____

☐ Substantial Damage determination recommended

☐ Other recommendations: _____

METHODS

Project Kickoff

- ▶ No Work Down Plan
 - Sites not targeted in geographic order
 - Client changed priority sites on daily basis
- ▶ Started with Collecting Data On Paper
 - Transcribed to Google Docs Spreadsheet
 - Data Shared with Client Daily
- ▶ Photos Taken on Personal Mobile Devices
 - Emailed to Project Manager
 - Saved to Google Drive

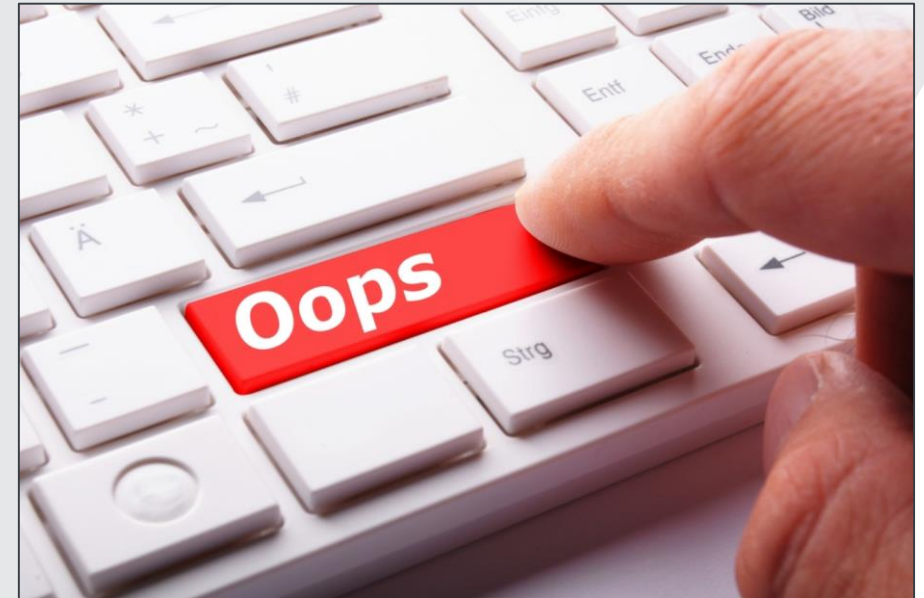


- ▶ Collector for ArcGIS
 - Used to collect few data points
 - No mobile data connections in the field

METHODS

Issues

- ▶ Limited Quality Control
 - 20 different teams = 20 different ideas of how to enter data
 - Illegible handwriting = slow transcription
 - Rushed transcription errors
- ▶ Minimal Quality Assurance
 - Client demand for daily updates for each school site
 - Multiple project staff interacting and editing data



METHODS

Improvements

▶ Work Down Plan

- Developed weekly schedule of site visits to manage ~20 teams
- Ideally inspect 200+ sites per week

▶ Transitioned to Fully Digital Offline Data Collection

- iPads with mobile data enabled
- Offline data collection through versioning with Collector for ArcGIS
- Third party mobile data collection application allowed form changes on the fly

▶ Challenges

- Schools closed with no staff or security not permitting entry after hours
- Continued expectation of full data reporting each day
- Enforcing QC Standards and best practices for using technology
- Accessibility to schools (washed out roads, refugee shelters at schools)

METHODS: CHALLENGES



METHODS: CHALLENGES



TECHNOLOGY

Fully Digital Data Collection

- ▶ ArcGIS Enterprise
 - ArcSDE
 - ArcServer
 - ArcGIS Online
 - Collector for ArcGIS
- ▶ GoCanvas
- ▶ Dropbox

ArGIS Enterprise Logo



gocanvas



Dropbox

TECHNOLOGY

Extended 8:38 AM 92%

Field	ID	Object	Alias	FieldDomainName	FieldType	FieldDefaultValue	FieldEditable
-------	----	--------	-------	-----------------	-----------	-------------------	---------------

PR Schools Manager

Search Schools

Batch Attribute Editor

Use one of the tools below to create a selected set of features to update. If the row is **highlighted**, the maximum number of records has been exceeded.

<input checked="" type="checkbox"/>	#	Layer Name
<input checked="" type="checkbox"/>	12	Assessment Status

Batch Attribute Editor

Inspection Status	Keep Existing Value
Assessment Change 1	Keep Existing Value
Assessment Change 1 Date	Keep Existing Value
Assessment Change 2	Keep Existing Value
Assessment Change 2 Date	Keep Existing Value
Inspection Group	Keep Existing Value
Date Assigned	Keep Existing Value

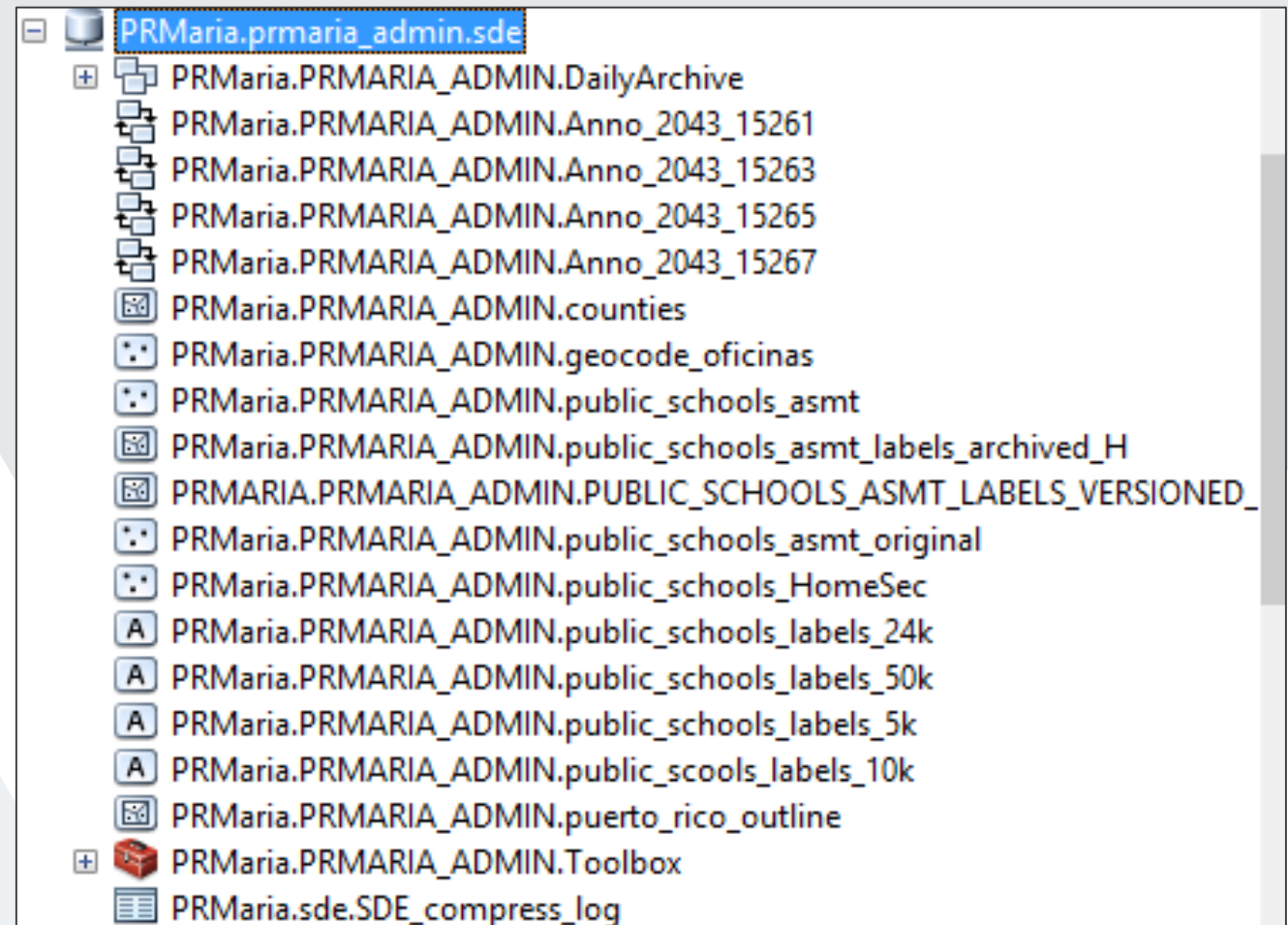
Clear

Web based Quality Assurance & Collection Planning

TECHNOLOGY

[illegible]

TECHNOLOGY



TECHNOLOGY

Extended

8:38 AM

92%

Cancel

Update

Location

Lat: 18.41015080° Long: -65.97296524°

Edited by PRMARIA_ADMIN on Thursday at 4:28 PM

Francisco Matias Lugo

Assessment Group

Yellow

Insp. Name (50 character limit)

Inspection Date

Type of Facility

Dirección (150 char. limit)

School Contact (100 char. limit)


Number of Buildings

Facility Area Flooded

One or More Buildings Flooded

Other Water Damage in Facility

General Flooding Comments (500 char. limit)




SJ-01

Web Map by [pr.sj_01](#)

Web map for inspection group SJ-01.

Created: Nov 19, 2017 Updated: Nov 26, 2017 View Count: 85



SJ-01

Feature Layer by [pr.sj_01](#)

Public Schools Collector Service

Created: Nov 19, 2017 Updated: Nov 26, 2017 View Count: 92

TECHNOLOGY

The screenshot displays the PR Schools Manager web application. The main interface features a map of Puerto Rico with numerous colored dots representing school locations. A search bar at the top left is labeled "Search Schools". On the right side, a "Batch Attribute Editor" window is open, showing a table with columns for "Layer Name", "Assessment Status", and "Assessment Change 1". The table contains one row with the value "12" under "Assessment Status". Below the table, there are several dropdown menus for "Assessment Change 1", "Assessment Change 1 Date", "Assessment Change 2", "Assessment Change 2 Date", "Inspection Group", and "Date Assigned", all set to "Keep Existing Value". A "Clear" button is located to the right of the dropdowns. An orange arrow points from the text "Web based Quality Assurance & Collection Planning" to the map area.

PR Schools Manager

Search Schools

Batch Attribute Editor

Use one of the tools below to create a selected set of features to update. If the row is **highlighted**, the maximum number of records has been exceeded.

✓	Filter	#	Layer Name
✓		12	Assessment Status

Batch Attribute Editor

Inspection Status: Keep Existing Value

Assessment Change 1: Keep Existing Value

Assessment Change 1 Date: Keep Existing Value

Assessment Change 2: Keep Existing Value

Assessment Change 2 Date: Keep Existing Value

Inspection Group: Keep Existing Value

Date Assigned: Keep Existing Value

Clear

Web based Quality Assurance & Collection Planning

TECHNOLOGY

GoCanvas

School Repair Form

Save Review Remember

School Information

*School Code

10058

School Name

Su Ramon E Betances

School Address

Carr 657 Km 1 Hm 1 Bo Bajadero

School City

Arecibo

Back 20% Next

GoCanvas

ATC-45 Detailed Evaluation Safety Assessment

Close

Save Review Remember

Evaluation - Overall Hazards

Investigate the building for the conditions below and select the appropriate condition. There is room for a sketch on an upcoming page.

*Collapse or Partial Collapse

Minor

Collapse or Partial Collapse Comments

*Building or Story Lean or Drift

None

Building or Story Lean or Drift Comments

*Fractured or Displaced Foundation

None

Fractured or Displaced Foundation Comments

Back 25% Next

GoCanvas

School Repair Form

Close

Save Review

Before Photographs

Remember Recall Delete Row

Before Photo 1

Photo

Capture Photo

Photo Description

Done

Back 60% Next

PRODUCTS

Reporting Assessment Status

▶ Red

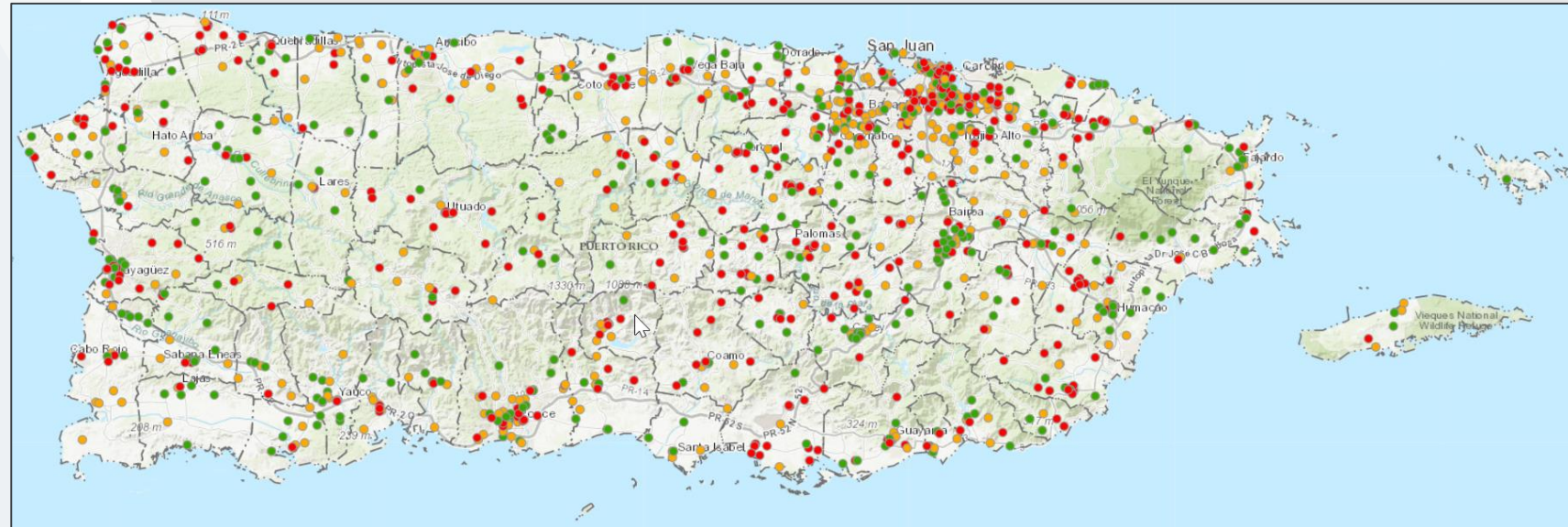
- Pest infestation
- No utilities
- Major damage

▶ Yellow

- Minor damage
- Debris removal
- Generator or cistern

▶ Green

- Able to reopen
- Minor work required



PRODUCTS

Reports for Individual Schools

▶ Health & Safety Evaluations

- Stored in SQL Database
- Set up HTML URL Query to generate report for individual record
- Script to export each URL query HTML to PDF

▶ Building Engineering Assessments

- Stored in flat table with GoCanvas
- Automatically generates prettyprint PDF
- Plugin auto exports to Dropbox file structure

PRODUCTS: HTML FROM SQL

← → ↻ 🏠 Secure | https://PRMaria/PublicSchools.html?codigo=10082 ← URL query on school code ☆ ⋮

Facility Evaluation (Site) Form for:
Dr Francisco Susoni | Codigo: 10082

Inspector(s) Name:	Sj04	Inspection Time:	12:39:07 GMT-0400 (Atlantic Standard Time)
Inspection Date:	Thu Nov 09 2017	School Code:	10082
Type of Facility:	escuela	Longitude:	-66.72310315
School Name:	Dr Francisco Susoni		
Latitude:	18.4624833		
Building Contact:			
Number of Buildings:			

General:

- Facility Area Flooded: **No**
- One or More Buildings Flooded: **No**
- Other Water Damage in Facility: **No**

Comments: The school was flooded 8 feet deep but has since been completely cleaned.

Services:

- Potable Water Service: **Yes**
- Potable Water Cistern: **No**
- Sewer Service: **Yes**
- Septic Tank Available: **Yes**
- Electrical Power Service: **No**
- Generator Available: **No**
- Gas (LP) Storage Tank Intact: **Yes**

PRODUCTS: HTML TO PDF

```
Using cmd As New SqlCommand
    cmd.Connection = ssconn
    cmd.CommandTimeout = 0
    cmd.CommandText = "select * from [PRMaria].[prmaria_admin].[public_schools_asmt_evw0] where codigo is not null"
    'and convert(date,last_edited_date) between convert(date,dateadd(dd,-1,getdate())) and convert(date,getdate())
    '
    cmd.CommandText = "select * from [PRMaria].[prmaria_admin].[public_schools_asmt_evw0] where codigo=43729"
Using dr = cmd.ExecuteReader
    While dr.Read
        sbfn.Clear()
        sbfn.Append(dr("region").ToString.Trim).Append("_").Append(dr("codigo").ToString.Trim).Append("_")
        sbfn.Append(dr("escuela").ToString.Trim).Append("_").Append(dr("asmt_group").ToString.Trim).Append(".pdf")

        strfn = sbfn.ToString.Replace(" ", "")
        strfn = RemoveIllegalFileNameChars(strfn)
        '
        strfn = pdfof & strfn

        objsw.WriteLine(wkpath & " -q --javascript-delay 20000 " & strurl & dr("codigo").ToString.Trim & " " & strfn)

        blngo = CAHTML2PDF.Wkhtmltopdf.Go(strurl & dr("codigo").ToString.Trim, pdfof.Replace("\", "\\"), strfn, "-q --javascript-delay 20000")

        If blngo Then
            objsw.WriteLine("good to go...")
        Else
            objsw.WriteLine("Error occurred...")
        End If
    End While
    dr.Close()
End Using
End Using
```

Auto HTML print to PDF script
courtesy of APTIM Sr. IMS Analyst

PRODUCTS

gocanvas



ATC-45 Detailed Evaluation Safety Assessment

No.
03593

Inspection

Full Name
Rich Allwes
Inspector Name (if different than Full Name)
Bolduc
Inspector Team
SJ-07

Inspection Date
11/27/2017
Inspection Time
11:10

Latitude Coordinates
13392 Longitude: -66.567841

Evaluation - Nonstructural Hazards

Current building conditions related to nonstructural hazards.

Parapets, Ornamentation None	Parapets, Ornamentation Comments
Canopy None	Canopy Comments
Cladding, Glazing None	Cladding, Glazing Comments
Ceilings, Light Fixtures None	Ceilings, Light Fixtures Comments
Stairs, Exits, Access Walkways, Gratings None	Stairs, Exits, Access Walkways, Gratings Comments
Interior Walls, Partitions None	Interior Walls, Partitions Comments
Mechanical & Electrical Equipment None	Mechanical & Electrical Equipment Comments
Elevators None	Elevators Comments
Building Contents, Other None	Building Contents, Other Description Building Contents, Other Comments



ATC-45 Detailed Evaluation Safety Assessment

No.
03593

Building Description

Code
51433
Building Number
Building 01
Building Name
Library
Address
Bo Coabey Carr 144 Km 9 Hm2 Jayuya, PR
Building Contact
Dr. Alvin Rios Cortes
Building Phone
787-377-4544 /939-292-6317
Number of Stories
1
Footprint Area (square feet)
No. of Residential Units

Type of Building
Low-Rise Commercial
Primary Occupancy
School

PRODUCTS



Dropbox

20107

Sorted by name

Inspection	
File Name	Inspection Date
20171122-160246-ATC_4...	11/22/2017
Inspector Name of Affected Item Full Name	Inspector Title
20171122-160246-ATC_4...	11/22/2017
File Size	File Type
17.2K	PDF
File Location	File Path
20171122-160246-ATC_4...	20171122-160246-ATC_4...
Upload to Google Drive	

Inspection	
File Name	Inspection Date
20171122-160249-ATC_4...	11/22/2017
Inspector Name of Affected Item Full Name	Inspector Title
20171122-160249-ATC_4...	11/22/2017
File Size	File Type
17.2K	PDF
File Location	File Path
20171122-160249-ATC_4...	20171122-160249-ATC_4...
Upload to Google Drive	

Inspection	
File Name	Inspection Date
20171122-164441-ATC_4...	11/22/2017
Inspector Name of Affected Item Full Name	Inspector Title
20171122-164441-ATC_4...	11/22/2017
File Size	File Type
17.2K	PDF
File Location	File Path
20171122-164441-ATC_4...	20171122-164441-ATC_4...
Upload to Google Drive	

20171122-160246-ATC_4...
ent.pdf

20171122-160249-ATC_4...
ent.pdf

20171122-164441-ATC_4...
ent.pdf

atc_45_detailed_evaluation_safety_asses

Sorted by name



11 387



62398

Sorted by name

Inspection	
File Name	Inspection Date
20171028-104925-ATC_4...	10/28/2017
Inspector Name of Affected Item Full Name	Inspector Title
20171028-104925-ATC_4...	10/28/2017
File Size	File Type
17.2K	PDF
File Location	File Path
20171028-104925-ATC_4...	20171028-104925-ATC_4...
Upload to Google Drive	

20171028-104925-ATC_4...
ent.pdf

Inspection	
File Name	Inspection Date
20171028-104929-ATC_4...	10/28/2017
Inspector Name of Affected Item Full Name	Inspector Title
20171028-104929-ATC_4...	10/28/2017
File Size	File Type
17.2K	PDF
File Location	File Path
20171028-104929-ATC_4...	20171028-104929-ATC_4...
Upload to Google Drive	

20171028-104929-ATC_4...
ent.pdf

20171028-104936-ATC_4...
ent.pdf

Inspection	
File Name	Inspection Date
20171028-104940-ATC_4...	10/28/2017
Inspector Name of Affected Item Full Name	Inspector Title
20171028-104940-ATC_4...	10/28/2017
File Size	File Type
17.2K	PDF
File Location	File Path
20171028-104940-ATC_4...	20171028-104940-ATC_4...
Upload to Google Drive	

20171028-104949-ATC_4...
ent.pdf

20171028-104953-ATC_4...
ent.pdf

20171028-104958-ATC_4...
ent.pdf

20171028-105002-ATC_4...
ent.pdf

20171028-105006-ATC_4...
ent.pdf

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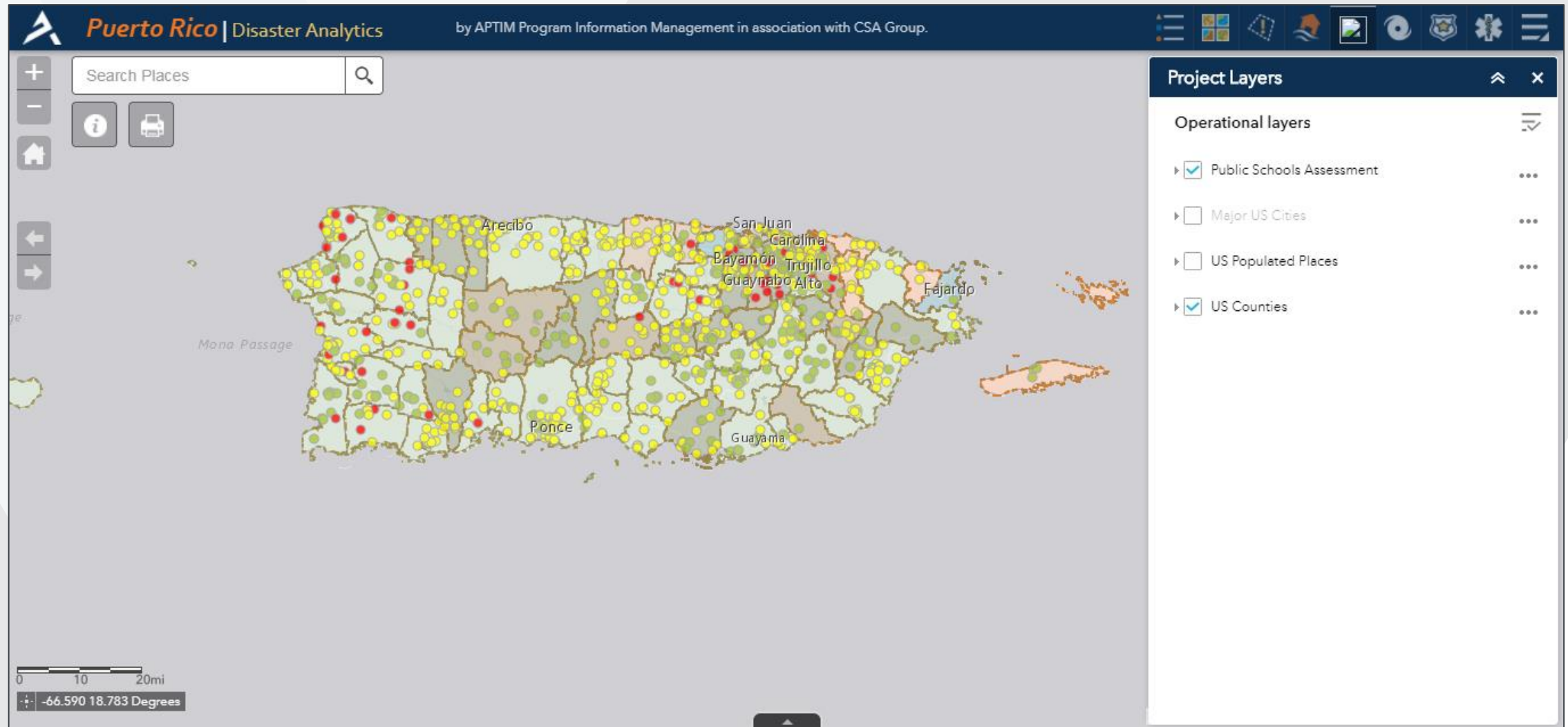
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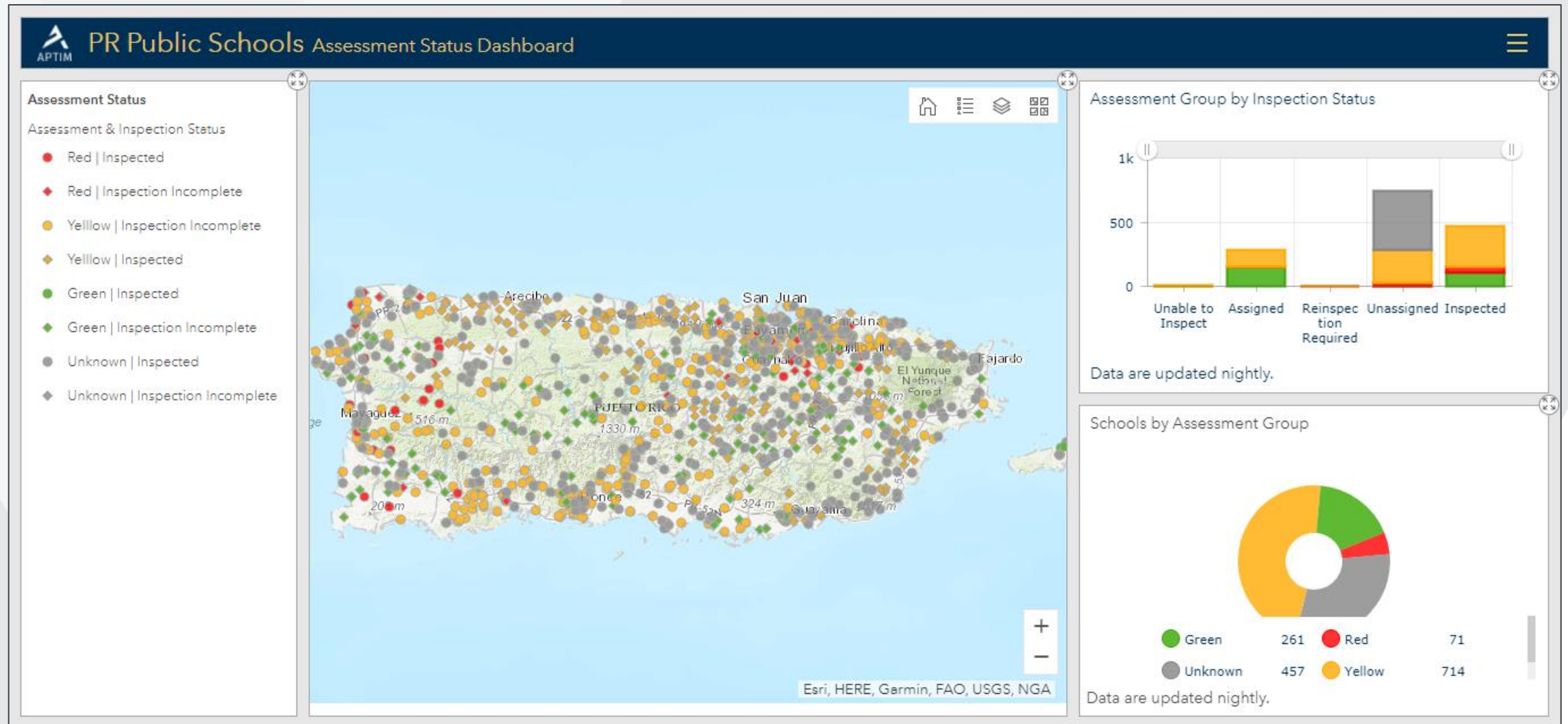
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PRODUCTS: CLIENT VIEW



PRODUCTS: CLIENT VIEW



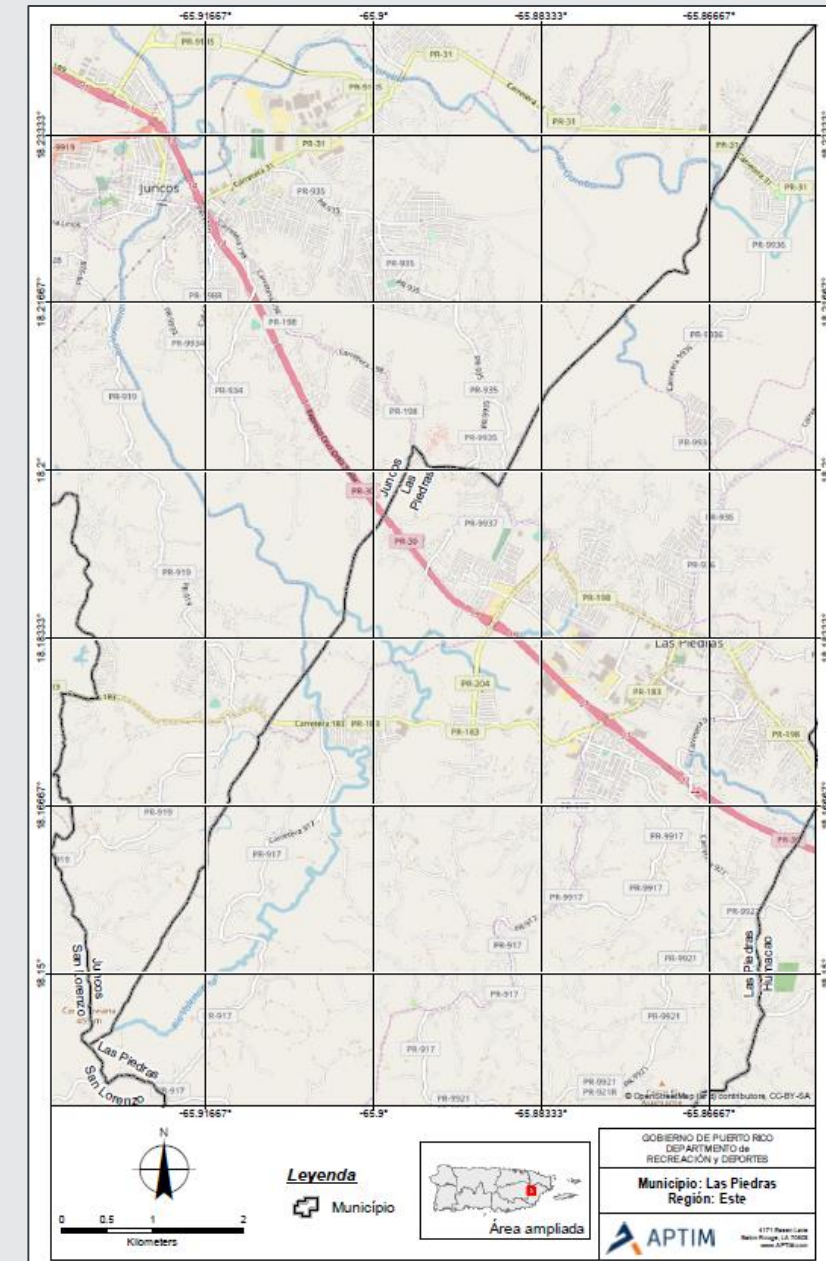
PRODUCTS



PRODUCTS: PARK ASSESSMENTS

Departamento de Recreación y Deportes (DRD)

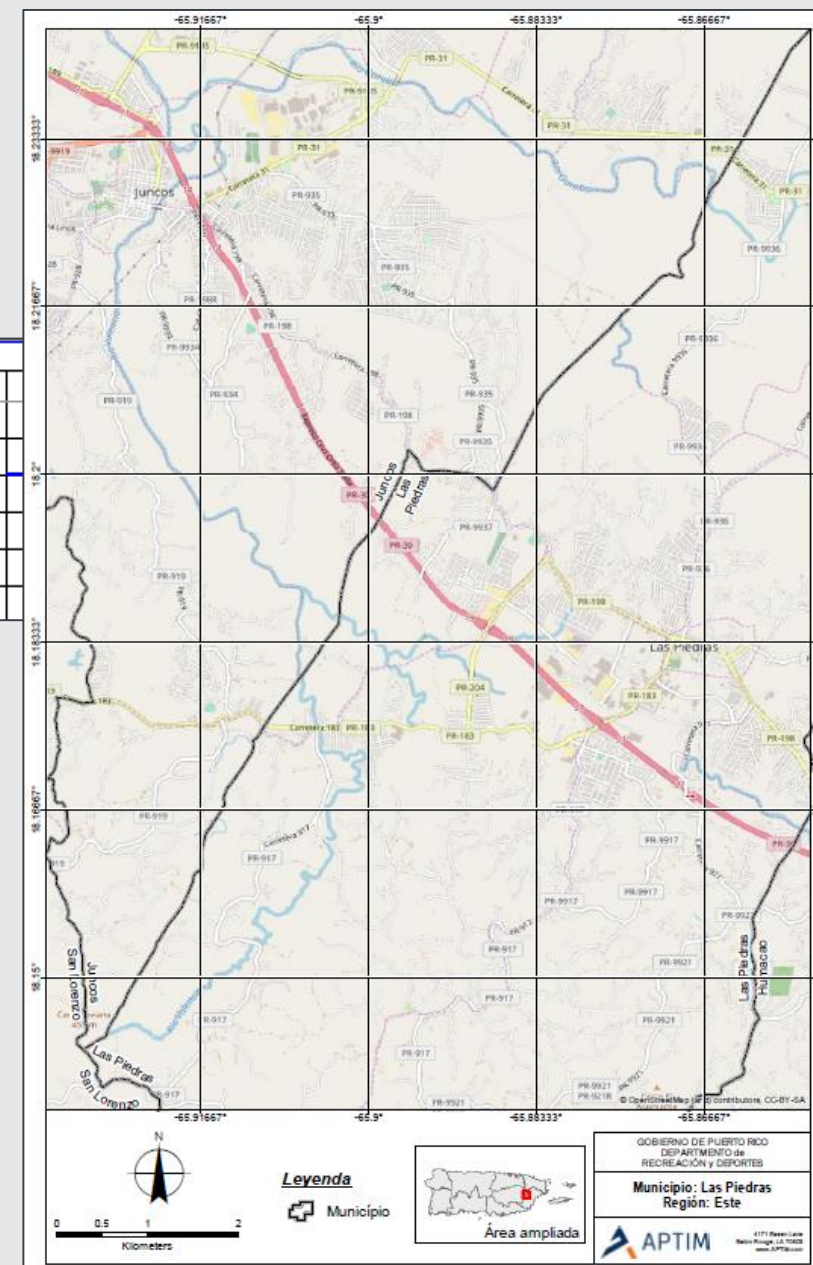
- ▶ Missing park locations ~900
 - Poor addressing
 - No central database of parks
 - Knowledge kept at regional manager level
 - FEMA attempted to use Google Maps to get locations
- ▶ Digitizing park locations
 - Data Driven Pages of sections of entire island
 - Region managers locate and label parks on paper
 - Web application out of question due to internet outages
 - Digitize and map locations from paper



PRODUCTS: PARK ASSESSMENTS

Municipio	Region DRD	Tipo Instalacion	Localización	
			DESCRIPCIÓN	DIRECCIÓN EXACTA
Utúado	Región Norte	Parque / Cancha	Urb. San José	
	Región Norte		Bo. Salto Abajo	
	Región Norte		Jardines de Bubao I. Bo. Viví Abajo	
	Región Norte	Cancha	Jardines de Bubao II	
	Región Norte		Parque Urbano	
	Región Norte	Cancha	Urb. Cabrera Salto Arriba	

COORDENADAS		Cabida	Medida	Finca	Folio	Tomo
		3,213.92	Mtrs	28,046	260	456
		1,472.72	Mtrs	28,045	255	456
		830.7963	Mtrs	24,166	159	423
		1,405.68	Mtrs	27,045	133	440
		1.22	Cdas	7,956	56	188
		4,121.21	Mtrs	10,743	220	265



PRODUCTS: DESKTOP REMOTE SENSING

Park Temporary Safety Perimeters

- ▶ Web based digitizing
 - NOAA Emergency Response Imagery
 - Park boundaries and debris areas
- ▶ Data Driven Pages PDFs
 - Map of each park
 - Estimates by DRD region

Total safety perimeter: 1,386,402m

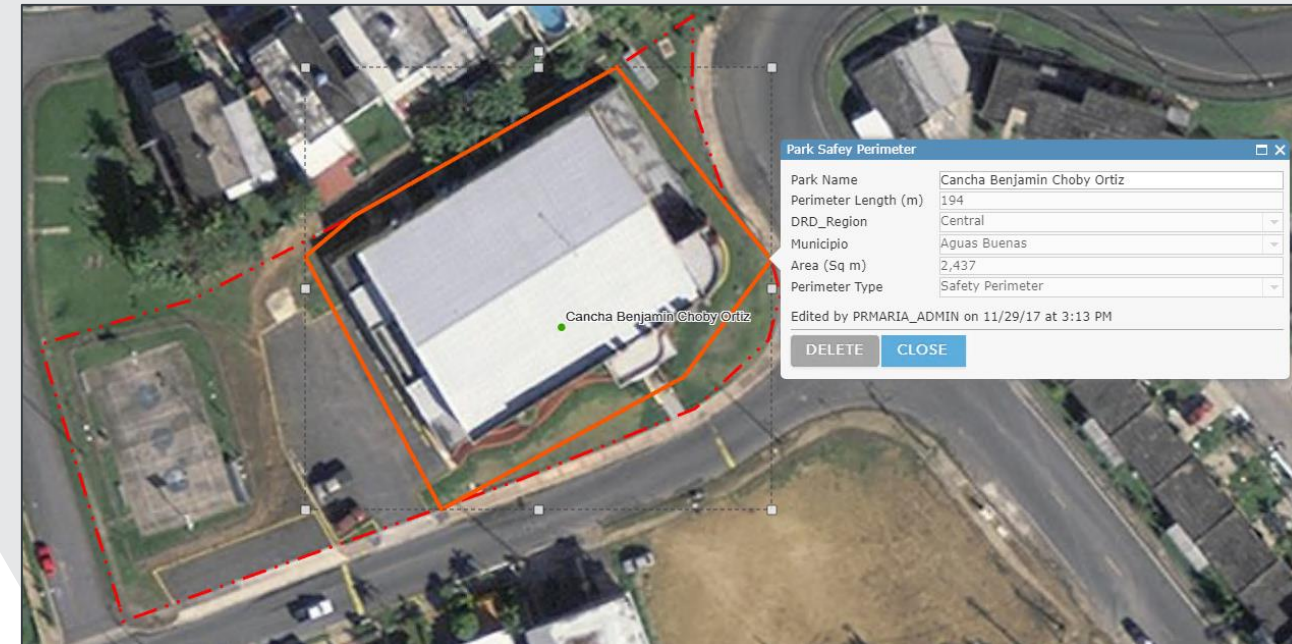
Average safety perimeter: 9,003m

Maximum Perimeter: 123,581m for Parque Atletico Ovidio Rodriguez in Region Sur

Minimum Perimeter: 149m for Pedro Ibizu Campos Parque in Region Sur

Estimated Perimeter in Meters by Region									
	Central	Este	Metropolitana	Norte	Noreste	Noroeste	Sur	Sureste	Suroeste
SUM (m)	73,147	35,056	527,838	189,681	12,483	75,086	197,929	27,778	247,404
MIN (m)	1,354	13,630	299	1,301	526	285	149	338	913
MAX (m)	16,396	21,426	74,874	31,522	5,723	21,854	123,581	9,793	93,290
AVG (m)	7,315	17,528	6,767	14,591	2,497	8,343	12,371	3,472	19,031

PRODUCTS: DESKTOP REMOTE SENSING



FUTURE DIRECTION: SUAV MAPPING



Drone2Map

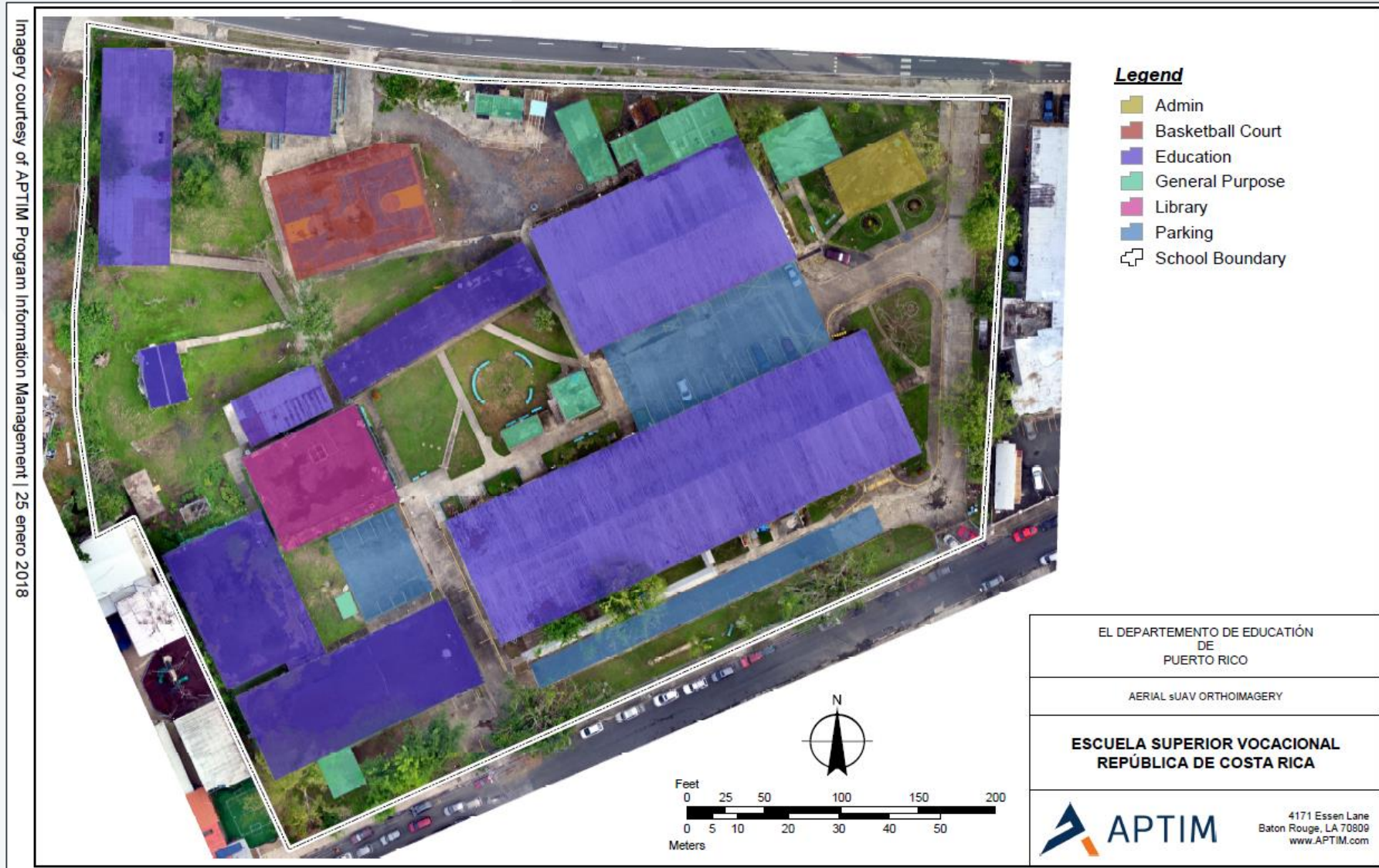
Contents

- Project Data
 - ☒ Images
 - Enabled
 - Disabled
 - ☒ Flight Path
 - ☒ Project Area
- 2D My Data
- 2D Products
 - ☒ Orthomosaic Clip
 - ☒ Orthomosaic
- Basemap
 - ☒ Imagery with Labels Reference

Ready

An aerial photograph of a residential neighborhood with a grid of blue dots representing flight points and orange lines connecting them to form a flight path. A red square outlines the project area. The Esri logo is visible in the bottom left corner of the map area.

FUTURE DIRECTION: SUAV MAPPING



THANK YOU

John W. McEwen | john.mcewen@aptim.com