

Final Technical Report

Awards G10AP00084 and G10AP00083

Term of Awards 4/1/2010-3/31/2011

Collaborative Research with William McCann and William Lettis & Associates Inc.: Analysis of the Effects of the 1918 Puerto Rico Earthquake and Calibration of Puerto Rico *Shakemap* Parameters

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ABSTRACT

The last major earthquake to affect Puerto Rico occurred in 1918 and was accompanied by a destructive tsunami. The 1918 Congressional Report by Reid and Taber, as well as the Special Earthquake Commission reports housed in the San Juan Archives, provide an unparalleled examination of building performance and earthquake related damage for Puerto Rico. Many of these structures still exist in Mayagüez and surrounding communities. The detailed building by building damage reports, other document and photographic images were identified, copied digitally, compiled, and analyzed.

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1918 EARTHQUAKE

The 7.3 Mw 1918 earthquake off Northwestern Puerto Rico is most recent earthquake to have caused deaths and damage on the island. Fortunately earthquake damage was well-documented by over 800 building by building damage surveys conducted by a local earthquake commission. This project will recovered those damage survey reports for the western Puerto Rico cities of Mayagüez, Añasco, and Aguadilla, as well as written communications with the commission relating locations of landslides, liquefaction, and damage to infrastructure in Puerto Rico. Earthquake commission documents are held in the San Juan Archives in Puerto Rico.

Archived commission documents, were identified and an inventory of what should be copied developed. They were photographed digitally by a person located and contracted through the San Juan Archive. Other documents were identified in the National Library on the second floor of the Archive building and in the photographic division of the Archive. These materials were obtained digitally. Images from the library were obtained using the using the same contractor as for the general archive documents. Those from the photographic division were made available on CD by the archive. There are restrictions on the duplication of the archive photographic images as they come from private collections.

The causative fault of the 1918 earthquake was identified on the basis of sediment deformation identified in seismic reflection profiles of the region (Mercado and McCann, 1998). Possible faults showing seafloor deformation, and with sufficient length to generate an event of the magnitude of the 1918 earthquake, and in a location and orientation necessary to generate the pattern of felt intensities are few. Mercado and McCann (1998) chose the normal fault on the east side of the Mona Canyon as the likely candidate and modeled a simple dip-slip motion on it to generate a modeled seafloor displacement, and propagated the tsunami to the coast of Puerto Rico. In general, modeled tsunami travel times and wave heights were consistent with observations in 1918. Doser et al. (2005) determined the focal mechanism of the 1918 earthquake. They found that the available waveforms could best be explained by an oblique normal faulting mechanism with one plane dipping west paralleling the strike of the east Mona Canyon fault. More recently, Lopez et al., (2008) modeled a submarine landslide off NW Puerto Rico and found that it too was consistent with tsunami wave heights and travel times. They also found that the fault identified by McCann on reflection profiles has not ruptured the uppermost layer of sediments in recent times. These results suggest that while the east Mona Canyon fault was responsible for the earthquake in 1918, the tsunami was triggered in a region nearby and not by the fault breaking the seafloor. The 1918 earthquake may be like the 1974, northern Lesser Antilles normal faulting event (M7.5), in that it broke the crust above the subduction zone, but did break the surface and generate a tsunami (McCann et al. 1982).

The 1918 earthquake is unusual in that a wealth of high quality information was collected by the local government in Puerto Rico. Because of the strength of the earthquake, the then Governor of Puerto Rico, Mr. Yager, convinced the Secretary of War to invite H. F. Reid and J. Taber to visit the island and investigate the earthquakes. Reid and Taber (1919 a, b) are the Congressional and Scientific publications of their findings. In addition to that investigation, the local government formed a special earthquake commission to inventory the damage caused by the earthquake and tsunami as well as set up a procedure for disbursing funds to those who suffered

loss. Much, if not all, of the correspondence and forms are in the General Archives in San Juan Puerto Rico and have not been examined since the early 20th century.

The 1918 earthquake damage reports and associated documents were copied and key pieces of data extracted so that the valuable lessons not learned at the beginning of the 20th century can be learned now. This rescued data will be very useful in helping to estimate future damage patterns from other earthquakes in the region.

DATA COLLECTION

Information on the 1918 earthquake was retrieved from two principal sources: San Juan, Puerto Rico, and the internet.

In San Juan, Puerto Rico there is a wealth of historic information held at the General Archive and National Library of Puerto Rico building just outside old San Juan. There, one can access original records in different formats and make arrangements for ambient light copying, usually by digital camera. Documents for this project were located in the General Archives, the National Library, and the Photographic Archives. Numerous public and private websites host pictures of early 20th century Puerto Rico. Some pictures are before the earthquake, while others illustrate earthquake damage.

SAN JUAN ARCHIVE-

Petitions of the Special Earthquake Commission 1918

A Special Earthquake Commission was formed after the passage of Law #8 in the special legislative session of December 1918. The Commission was established to collect information about the damage caused by the earthquake and to supervise the allocation of funds for repairs. The petitions, commission correspondence, and other related documents are archived in the General Archive in San Juan, Inventory of Public Works, Misc. Matters, Boxes 160-165. To our knowledge this information, first identified several years ago as a part of a previous NEHRP program, has not yet been tapped because of the volume and fragile nature of information available.

Table 1a. Number of petitions, by municipality, as of 1/27/1921, and Today

| <i>Town</i> | <i>Petitions in 1921</i> | <i>Petitions Examined in 2010-2011</i> |
|-------------|--------------------------|--|
| Mayagüez | 326 | 339 |
| Añasco | 171 | 139 |
| Aguadilla | 275 | 89 |
| Aguada | 86 | 0 |

An aggressive search of the documents for Aguada was undertaken, as they did not appear along with the other commission petitions. All records in the archive pertaining to Aguada for that period were examined, all to no avail. Not a single petition for Aguada was ever found. Similarly not all the petitions for Aguadilla or Añasco were found.

Table 1b. Aguadilla & Añasco Petition Summary

Añasco-

(161/208/1/415) (Caja/Legajo/folder/image#)

From Earthquake Board

171 Petitions Received

28 denied

143 granted

6 new houses

137 houses repaired

Final Stats from Archive:

139 Petitions in Archive transcribed and documented, out of 171 submitted, or 81%

21 denied, out of 28, 75%

118 repaired

0 new houses

Aguadilla-

(161/208/1/410)

From Earthquake Board

275 petitions received

92 Denied

183 granted

147 new houses (111 constructed at Barrio Obrero)

36 repaired

Final Stats from Archive:

88 Petitions in Archive transcribed and documented, out of 275 submitted, or 32%

29 “new house”

24 repaired

118, or 80% of the “new house” petitions were not found in the archive, while only 12, or 33% of the repaired houses were not found in the archive. This suggests the petitions involving repairs were preferentially saved, and that most of the petitions for destroyed houses were discarded or archived elsewhere. This seems to be true for the Añasco records too.

Summary for Aguadilla

| Source | Total # of Petitions | # “New House” | # Repaired | # Missing |
|--------------------------|----------------------|---------------|------------|-----------|
| Earthquake Board Records | 275 | 147 | 36 | |
| Archive Search | 88 | 29 | 24 | 187 |

Summary for Añasco

| Source | Total # of Petitions | # "New House" | # Repaired | # Missing |
|--------------------------|----------------------|---------------|------------|-----------|
| Earthquake Board Records | 171 | 6 | 137 | |
| Archive Search | 139 | 0 | 107 | 40 |

Other Government Documents 1918

Petitions are supplemented by the government correspondence concerning the condition and need for repairs of public structures damaged or destroyed by the earthquake, telegrams noting landslides, and reports on bridges and buildings. These are in the same boxes as the Commission petitions for relief. A total of XXX images of these original documents were captured using ambient light and a digital camera. Table 2 has a summary of the materials copies and a detailed inventory of each image.

Table 2 Image description of documents found in the San Juan Archive

Box Summaries:

Caja 159 Legajo 205 Large Closed Folder , 56 images
Reports on 1867 and 1890 earthquakes

Caja 159, Legajo 205, Folder 45 "Temblor 1918", 136 images
Misc. documents on 1918 earthquake

Caja 160, Legajo 206, 681 images
Aguadilla

Caja 161, Legajo 208, Folder 1, 487 images
Aguadilla

Caja 161, Legajo 208, Folder 2 , 413 images
Aguadilla

Caja 162, Legajo 209, Folder 1 , 490 images
Añasco

Caja 162 Legajo 209 Folder 2, 292 images
Añasco

Caja 162 Legajo 209 Folder 3, 201 images
Añasco

Caja 162 Legajo 209 Folder 4, 204 images
Añasco

Caja 163, Legajo 210, 495 images
Misc. Towns

Caja 164, Legajo 211, Folder 1, 529 images
Mayagüez

Caja 164, Legajo 211, Folder 2, 321 images
Mayagüez

Caja 164, Legajo 211, Folder 3, 264 images
Mayagüez

Caja 165, Legajo 212, Folder 1, 201 images
Mayagüez

Caja 165, Legajo 212, Folder 2, 291 images
Mayagüez

Caja 165, Legajo 212, Folder 3, 289 Images
Mayagüez

Caja 165, Legajo 212, Folder 4, 316 images
Mayagüez

Box Details:

Caja 159, Legajo 205, Large Closed Folder,

Description

22 images- Report on 1890 earthquake

31 images- Report on 1867 earthquake

Caja 159, Legajo 205, Folder 45 “Temblor 1918”

Image #, Description

1 Telegram Juana Diaz–Damage to building, 10/11/1918 Edificio donde esta la oficina (de la Alcaldia) con grandes desperfectos

2 Telegram Aguadilla- Acueduct damaged, request for tubing

3 Telegram Mayagüez- Road to Las Marías, 18km, landslide, 10/16-17/1918 Mayagüez Carretera Las Marias Km 18 obstruyose derrumbes ayer tarde, movimiento sísmico no ha terminado

4 Telegram Yauco- Supplies to go to Aguadilla

5 Telegram Humacao- no supplies to give

6 Telegram Manati- no damage found so far, “Obras metalicas mataplatanos, cialitos, morovis, y la vega sin novedad”

7-9 Benitez (1918) Report by the Superintendent of Public Works to the Commissioner of the Interior Oct 23, 1918....

Informe del Superintendente de obra publicas al comisionado del interior sobre los desperfectos causados a las obras publicas por el fenómeno sísmico que tuvo lugar el 11 de octubre de 1918, dated October 15, 1918

“Puente sobre Madre Vieja en la carreterra Aguadilla-Aguada. Este Puente fue sacudido de tal manera que estribos y pila se desplomaron mas de 8” y el extremo del puente del lado de Aguadilla se monto sobre el firme de l carretara. Parte de la viguería de madera en el tramo entre la pila y Aguadilla esta destrozada. Me pareció posible tratándose de una obra de madera de carácter provisional, restablecer el puente sobre los mismos apoyos sin grandes gastos. De un lado y otro de este puente en una longitud como 100 metros se han produjo grandes grieta en el terreno.

Carretera Añasco-Mayagüez- Puente Barcelona sobre el rio Yaguez. Esta obra fue totalmente destruida. El ablero metalico descendió hasta el lecho del rio habiéndose descosido la primera viga transversal del lado de Añasco. La correa o vigas longitudinales aparecen also torcidas. Los estribos y muros de acompañamiento están destruidos. Es necesario remover el tramo metalicvo desco...iendo en el sito que se encuentra todas las uniones necesarias. Este trabajo debe acometerse seguida, no solo por evitar mayor deterioro del tramo metalico sino porque constituye un peligro para Mayagüez pues formaría represa el rio en caso que creciera. La entrada a Mayagüez se hace por el camino del Colegio de Agricultura y el puente Balboa sobre la carretera de las Marias.

Mayagüez- Ponce. Pase por esta carretera pero no pudo ver ninguna averia importante. Algunos derrumbes entre Guayanilla y Ponce pero ninguno interrumpe el transito. Al sobresante de Mayagüez, Sr. Carlos Gonzalez le ordene trasladarse a Añasco y prestar auxilios a aquella población, con motivo de los de desastres causados allí por el terremoto. El sobrestante auxiliar quedo temporalmente encargado del distrito.”

10 Telegram Ponce- supplies sent to Aguadilla

11 Letter Ponce- damage to buildings

12 Letter Ponce- where to put the telegraph?

13 Letter Comerio- Permission to remove debris from calle Vegas

14 Letter Yauco- supplies for Aguadilla

15 Letter Superintendent of Telegraph- ready to prepare budget of damage to telegraph system

16 Letter Bayamon- Damage to City Hall

17 Letter Guayama- No damage

18 letter Ponce- Damage report

19 Telegram Ponce- Acueduct broken in Isabela

20 Letter San Sebastian- letter on damage

21 Memo to Sr. Caballero- Prepare list of damage caused by earthquake on Oct 24th.

22 Letter to Yauco- send supplies to Aguadilla

23 Letter Rincon- send supplies to Aguadilla, for school and sugar plant

24 Memo to Sr. Heinzman- mechanics sent to Mayagüez to effect repairs

25 cover to telegram (26)

26 Letter Aguadilla- arrival of supplies by train from Quebradillas

27 freight bill

28 Letter Guanica- delivery of material to Aguadilla

29 Telegram Ensenada- about material for Aguadilla

30 Letter to Aguadilla, Guanica will send tubing

31 letter San Juan- Central Coloso send material to Aguadilla

32-33 Letter Lares- description of eq effects

34-35 Letter Aguadilla- by Subrepresentante del distrito # 10. Description of effects. "... el Puente de maderas K.O. 300 sobre el rio Culebrinas (madre vieja) Carretera No 2 Aguadilla a Añasco.... El puente de maderas sobre el rio Culebrinas se desprendió el tablero con sus vigas del muro lado de Aguadilla como unos sesenta centímetros mas o menos quedando el transito obstruido. En vista de ello utilice unos tablones para facilitar el paso mas luego vi que los temblores continuaban y utilice una variante por la central Coloso de la cual obtuve permiso, facilitando asi el paso franco y sin peligro para Mayagüez desechando el puente. Por este variante paso el Senor SubComisionado Senor Benitez y ordeno repararla con tosca para en caso de lluvia no tener otra vez el transito obstruido. Para este trabajo tengo a bien incluir presupuesto en el que también figuran los demás gastos habidos en el puente con guardias y demás peones empleados en facilitar paso. Los demás desperfectos que han ocurrido en este distrito a mi cargo los conoce Ud por mi aludida carta del 12 corriente...."

36 Letter to several mayors- send material to Aguadilla to repair acueduct

37 Letter Yabucoa- continue repairs on bridge over Yabucoa river.

38 Telegram Quebradillas- about material for repairs

39 Telegram Arroyo- no material to send

40 Letter Aguadilla- about arrival of tubes at Aguadilla

41 Letter Caguas- stop car of Ing. Caballero and have him call Sub-comissioner

42 Memo to Superintendent of Public Works- damage to bridges ,rest of letter is probably in image 62, copy of images 7-9

43 Telegram Yabucoa- report on repairs of bridge in Yabucoa

44 Telegram San Juan-

45 Telegram Yabucoa- about bridge repairs

46 Letter- take photos before disassembling Barcelona bridge

47 Letter- take photos before repairing bridge over rio Culebrinas

48 Letter Quebradillas- Isabela acueduct needs material for repairs

49 Letter San Juan- from Cigar and Cigarette Manufactures about Juana Diaz

50 Letter San Juan- about damage in San German

51-54 Letters to Commissioner from Dept. of Agriculture

55-56 Letter Utuado- status of Utuado

57 Damage report from District #7

58 Damage report Vieques

59 Damage report San Sebastian

60 Damage report Barrios Guatemala, Pozas, Poblacion

61 Damage report San Sebastian

61-62 copy of images 8-9

63-71 Report to the Comissioner of the Interior..... " Casillas de Camioneros: Casi todas las casillas camineros en las Isla sufrieron desperfectos de consideración..... Puente sobre el rio Yaguez. A la entrada de Mayagüez en la carretera Mayagüez-Añasco fue tal el efecto del fenómeno que destruyo por completo los estribos de esta obra, desplomándose el tramo metalico hacia el fondo del rio. Aunque se intenta aprovechar la parte del tramo para tenerlo sobre otro curso de agua que requiere una obra de menos luz, sin embargo, la reconstrucción total del puente sobre el rio yaguez es de imprescindible necesidad. Se estimata su costo en la suma de \$19,350.

Puente sobre el rio Culebrinas. Fue esta una de las obras casi destruidas pues los estribos con sus muros en alas y la pila central se encuentran completamente agrietados. Aunque se ha procedido a repararlo con objeto de dar paso por aquella carretera, se considera sin embargo lo mas prudente reconstruirlo de un todo, para lo cual se estima que el costo de la obra no será menor de \$8,000....

.....Puente sobre el rio estero. Este puente emplazado en el trozo de carretera de Mayagüez a la escuela correccional, sufrió serias averias, Las reparaciones de las cuales se estiman costaran alrededor de \$1,300..

Puente Candel. Situado en la carretera Mayagüez-Las Marias. Presenta esta obra varias grietas en los estribos y muros del lado las marias, cuya reconstrucción se ha estimado costara unos \$800..... Derrumbes.... Carretera Mayagüez-las marias. Unos 2800 metros cubicos se desprendieron de los taludes de esta seccion y se estima que removerlos costar alrededor de \$560....

Carretera Mayagüez-Las Vagas. En esta sección hubo desprendimientos que llegaron alrededor de 2000 metros cubicos. Se ha procedido a removerlos bajo un presupuesto de \$300...

72 Letter from subcommissioner of district #3 description of damage to drainage and bridges in Western PR

73-74 letter from subcommissioner district #9 (Bayamon) describing damage

75-76 letter from commissioner, prepare budget for repairs

77 letter Lares- prepare list of damage

78-79 letter from Ms. Yager about red cross package

80 telegram Camuy- damage to bridge

81 telegram Arecibo damage to bridge

82 telegram Arecibo- damage to bridge

83 telegram Arecibo- "...Tuberia cruce Rio Culebrinas rota. Pueblo sin agua."

84 telegram Cayey- Ernesto Torres killed, Antonio Florido serious condition.

85 telegram Rio Peidras – road damage

86 telegram Aibonito- damage and deaths

87 telegram Aguadilla- "Puede irse a Mayagüez, desechando puente Culebrinas. He conseguido arreglar por Central Coloso."

88 telegram Mayagüez- "Terremoto destruyo puente Barcelona sobre Rio Yaguez y puente cano corazón carretera a correccional. Abrio grieta sobre arco obra Km tres quinientos ramal cabo rojo. Hay otros danos como derrumbes etc. Casillas de camioneros inhabitables. "

89 letter Comerio- large landslide

90 letter Dominican Republic- what is state of reinforced concrete bridges

91letter Arecibo- damge in and around Arecibo

92 telegram town unknown- damage to roads

93-95 letter San German- damage to buildings, no deaths

96 letter Bayamon-

97 telegram Lares-

97-100 receipts

101-104 letters Mayageuz- missing tools

105- letter- Lares will inspect schools

106-letter page 2 of report, incomplete, damage to bridges and roads, responding to image 90 Santo Domingo

107 letter Isabela/Aguadilla- Puente Guajataca

108 note

110 telegram Ponce

111 telegram Arecibo
112 telegram Rincon
113 telegram Utuado landslides
114 telegram Arecibo
116-124 letter, extensive description of damage from commissioner to Governor
125 letter Aguadilla, damage there and Añasco
126 letter reply to DR letter of images 43, and 63.
127-129 memo for commissioner on damage
130 letter san Juan –Arroyo tubing for Agaudilla
131 letter about tubing shipment for Aguadilla
132 telegram Mayagüez 10/13/1918 10:34pm “Transito entre esaa Mayagüez y Ponce por esta via no esta interrumpida. Puente madre vieja Culebrina, destruido en parte, puente Barcelona sobre Yaguez destruido totalmente. Se pasa por terrenos agricultura y Balboa, Banos en poblaciones Aguadilla Aguada, Añasco y Mayagüez son imponderables. Perdidas de vida en Aguadilla Añasco y Mayagüez son muchas poblaciones necesitaran ayuda Gobierno Insular. Añasco necesita tiendas de campana. Continuan moviminetos seismico”, J. Benitez.
133 telegram damage Guayama
134 telegram damage Bayamon
135 telegram damage Manati
136 telegram damage Vega Baja

Caja 160, Legajo 206

Image #, Description

2 inspector report for petitions # 299, 301, and 302
3-6 Petition 299
7 Petition 282 voucher, addressed to governor of PR, associated with preview petition?
8-11 Petition 301
12-15 Petition 302
16 Inspector report for 300 and 303
17-20 Petition 300
21- 25 Petition 305
16 Inspector report for 304 and 305
27-30 Petition 304
31-34 Petition 305
35 Inspector approval for payment, #306
36-39 Petition 306
40 Inspector report (?) for 298, 283, 281
41- affidavit for 281
42- affidavit for 283
43 Inspector cost estimate for 294 (ref to 205), and 296
44-47 Petition 294
48-51 Petition 296
52 Inspector cost estimate for 291
53-56 Petition 291
57 Inspector report for 289

58-61 Petition 289
62-63 affidavit for 289
64 Inspector cost estimate for 292
65-71 Petition 292 and associated docs
72-77 Petition 288 and associated docs
78 Inspector report 281, 283
79 Inspector report 210
80 Inspector cost estimate for 157
81 Inspector cost estimate for 154
82 Inspector cost estimate for 124
83 Inspector cost estimate for 119
84 Inspector cost estimate for 117
85 Inspector cost estimate for 108(?)
86 Inspector cost estimate for 108
87 Inspector cost estimate for 98
88 Inspector cost estimate for 95
89 Inspector cost estimate for 92
90-93 Petition 288, associated docs
94 Inspector report 227
95 Inspector cost estimate for 240
96 Inspector cost estimate for 245
97 Inspector cost estimate for 247
98 Inspector cost estimate for 249
99 Inspector report for 250 (rejected, no damage)
100 Inspector report for 253 (rejected no damage)
101 Inspector report for 255 (rejected no damage)
102 Inspector cost estimate for 256
103 Inspector cost estimate for 257
104 Inspector report for 260 (house destroyed, but already rebuilt?)
105 Inspector report for 261 (rejected no damage)
106 Inspector cost estimate for 212
107-110 Petition 212
111-115 Petition 213 and cost estimate
116-120 Petition 215 and cost estimate
121-125 Petition 216 and cost estimate
126-130 Petition 217 and cost estimate
131-135 Petition 218 and cost estimate
136-140 Petition 219 and cost estimate
141-145 Petition 220 and cost estimate
146-150 Petition 221 and cost estimate
151-155 Petition 222 and cost estimate
156-160 Petition 225 and cost estimate
161-165 Petition 209 and cost estimate
166-170 Petition 204 and cost estimate
171-175 Petition 203 and cost estimate
176-180 Petition 201 and cost estimate

181-185 Petition 202 and cost estimate
186-190 Petition 2a and cost estimate
191-193 Summary of petition numbers, cost, notes, some may be for Mayagüez
194-196 Affidavits for petition 210
197-198 List of petition rejections and reasons (in English)
199-202 Petition 210
208-207 Inspector notes regarding 309, 310, 311, and 312. ref to 78
211-214 Petition 309
215-218 Petition 310
219-222 Petition 311
223-226 Petition 312
227 -229 Affidavit for 314
230-236 Petition 290
237 Inspector notes regarding 319, 290
238 Affidavit for 319
239 back side of previous page, endorsed by Office of Treasurer
240 letter from Crescencia Jayme, no petition #
241 illegible, signed by Crescencia Jaime, no petition #
242-243 Affidavit, by Crescencia Jaime, no petition #, sent from Aguada
244-252 Petition 287, letters and standard form (Rita Milan Valle)
253 Inspector (architect) notes regarding 285, 286, 287
254 Inspector (architect) notes regarding 58(?)
255-258 Petition 286
259-263 Petition 285
264-268 Petition 284
269 Inspector notes regarding 293, 297, 295
270-273 Petition 293
274-277 Petition 297
278-281 Petition 295
282 Inspector cost estimate for 90
283 Inspector cost estimate for 77
284 Inspector cost estimate for 75
285 Inspector cost estimate for 74
286 Inspector report for 72 – petitioner died 1919, 2 sons moved away
287 Inspector cost estimate for 70
288 Inspector cost estimate for 68
289-293 Petition 308
294 Inspector cost estimate for 66
295 Inspector cost estimate for 28
296 Inspector cost estimate for 25
297 Inspector cost estimate for 15
298 Inspector cost estimate for 64
299 Inspector cost estimate for 51
300 Inspector cost estimate for 47
301 Inspector cost estimate for 24
302 Inspector cost estimate for 178

303 Inspector cost estimate for 42(?)
304 Inspector note for 335 – petitioner died 1919
305 Letter from Executive Secretary, SJ, looks like transmittal of funds to Agudilla
306-308 Summary of petition numbers, amount recommended to be paid
309-311 Fuzzy version of previous
312 Summary of petition numbers, \$ amounts, notes for Agudilla
313 Inspector notes for 282, 338, 320
314-317 Petition 282
318-321 Petition 320
322 Inspector transmittal letter for 282, 313, 320, 321, 323, 324, 325, 327, 305
323-327 Petition 338
328-333 Petition 337
334-336 Petition 336
337 Inspector notes for 330, 332, 335
338-341 Petition 335
342-346 Petition 332
347-352 Petition 330
353 Inspector notes for 144, 328, 331
354-359 Petition 328
360-364 Petition 144
365-369 Petition 331
370 Inspector notes for 333,334
371-375 Petition 334
376-381 Petition 333
382 Inspector notes for 325,327
383-386 Petition 325
387-391 Petition 327
392 Inspector notes for 322,326
393-397 Petition 322
398-402 Petition 326
403 Inspector notes for 321, 323, 324
404-407 Petition 321
408-411 Petition 323
412-415 Petition 324
416 Inspector cost estimate for 313
417-420 Petition 313
421-426 Petition 314
427 Inspector notes for 316
428 Inspector notes for 315, 316, 317
429-430 letter regarding 318
431 Inspector cost estimate for 318
433-466 Petition 315
467-440 Petition 316
441 Affidavit for 280
442-445 Petition 318
446-447 Summary treasurer’s report for Agudilla and Aguada (english)

448-449 Summary report for Agiadilla and Aguada
450-451 Summary treasurer's report for Agiadilla and Aguada (english)
452-453 Summary report for Agiadilla and Aguada
454 Inspector cost estimate for 1
455 Inspector cost estimate for 2
456 Inspector cost estimate for 3
457 Inspector cost estimate for 4
458 Inspector cost estimate for 5
459 Inspector cost estimate for 199
460-463 Petition 199
464 Inspector notes for 20
465 Inspector cost estimate for 205
466-469 Petition 205
470-474 Petition 206
475 Inspector cost estimate for 206
476 Inspector cost estimate for 228
477 Inspector cost estimate for 229
478 Inspector cost estimate for 230
479 Inspector cost estimate for 231
480 Inspector cost estimate for 232
481 Inspector cost estimate for 235
482 Inspector cost estimate for 237
483 Inspector cost estimate for 241
484 Inspector cost estimate for 234, 244
485 Inspector cost estimate for 236
486 Inspector cost estimate for 238
487 Inspector cost estimate for 239
488 Inspector cost estimate for 242
489 Inspector cost estimate for 243
490 Inspector cost estimate for 246
491 Inspector cost estimate for 248
492 Inspector cost estimate for 251
493 Inspector cost estimate for 254
494 Inspector cost estimate for 258
495 Inspector cost estimate for 259
496 letter to Earthquake Board, listing petition numbers (lot 3) for Agiadilla, 1 for Mayagüez (326)
and 1 for Añasco (173) ,other side of letter missing
497 Inspector notes for 49
498 Inspector cost estimate for 188
499 Inspector notes for 139
500 Inspector notes for 135
501 Inspector cost estimate for 14
502 Inspector notes for 134
503 Inspector cost estimate for 178
504 Inspector cost estimate for 7
505 Inspector cost estimate for 104

506 Inspector notes for 144
507 Inspector notes for 170
508 Inspector notes for 131
509 Inspector notes for 23 (refs to 48, 90)
510 Inspector notes for 13
511 Inspector cost estimate for 105
512 Inspector cost estimate for 197
513-516 Petition 197
517-518 Inspector notes for 156
519 Inspector notes for 112 (ref to 110)
520 Inspector cost estimate for 21 (also 118)
521 Inspector notes for 93
522 Inspector notes for 62
523 Inspector notes for 101
524 Inspector notes for 169
525 Inspector notes for 146
526 Inspector notes for 254
527 Inspector notes for 228
528 Inspector notes for 138
529 Inspector notes for 129
530 Inspector cost estimate for 54
531 Inspector cost estimate for 69
532 Inspector notes for 171 and 69
533 Inspector cost estimate for 187
534 Inspector notes for 182
535 Inspector cost estimate for 178
536 Inspector notes for 36 (notes same as 166)
537 Inspector cost estimate for 166
538 Inspector cost estimate for 122
539 Inspector notes for 96
540 Inspector notes for 76
541 Inspector cost estimate for 263
542 Inspector cost estimate for 6
543 Inspector cost estimate for 73
544 Inspector cost estimate for 26
545 Inspector cost estimate for 126
546 Inspector cost estimate for 149
547 Inspector cost estimate for 173
548 Inspector cost estimate for 34
549 Inspector cost estimate for 213 (?) number not clear (Juana Crespo)
550 Inspector notes for 116
551 Inspector cost estimate for 91
552 Inspector cost estimate for 8
553 Inspector cost estimate for 83
554 Inspector cost estimate for 174
555 Inspector cost estimate for 194

556 Inspector cost estimate for 33
557 Inspector cost estimate for 17
558 Inspector cost estimate for 100
559 Inspector cost estimate for 71
560 Inspector cost estimate for 177
561 Inspector cost estimate for 103
562 Inspector cost estimate for 132
563 Inspector cost estimate for 11
564 Inspector cost estimate for 152
565 Inspector cost estimate for 185
566 Inspector cost estimate for 94
567 Inspector cost estimate for 106
568 Inspector cost estimate for 18
569 Inspector cost estimate for 84
570 Inspector cost estimate for 27
571 Inspector cost estimate for 99
572 Inspector cost estimate for 78 and 79
573 Inspector cost estimate for 224
574-577 Petition 263
578-581 Petition 224
582 Inspector cost estimate for 214
583-586 Petition 214
587-591 Petition and cost estimate for 211
592-596 Petition and cost estimate for 200
597-599 Letter and cost estimate for 197
600-604 Petition and cost estimate for 198
605-609 Petition and cost estimate for 207
610-614 Inspector report and Petition for 223
615 Inspector cost estimate for 39
616 Inspector cost estimate for 120
617 Inspector cost estimate for 41
618 Inspector cost estimate for 121
619 Inspector cost estimate for 55
620 Inspector cost estimate for 56
621 Inspector cost estimate for 57
622 Inspector cost estimate for 48
623 Inspector cost estimate for 43
624 Inspector report for 40
625 Inspector report for 38
626 Inspector cost estimate for 37
627 Inspector cost estimate for 35
628 Inspector cost estimate for 30
629 Inspector cost estimate for 19
630 Inspector cost estimate for 190
631 Inspector cost estimate for 10
632 Inspector cost estimate for 192

633 Inspector cost estimate for 16
 634 Inspector cost estimate for 143
 635 Inspector cost estimate for 111
 636 Inspector cost estimate for 123
 637 Inspector cost estimate for 58
 638 Inspector cost estimate for 67
 639 Inspector cost estimate for 60
 640 Inspector cost estimate for 59
 641 Inspector cost estimate for 61
 642 Inspector cost estimate for 110
 643 Inspector cost estimate for 50
 644 Inspector cost estimate for 140
 645 Inspector cost estimate for 32
 646 Inspector cost estimate for 159
 647 Inspector cost estimate for 53
 648 Inspector cost estimate for 180
 649 Inspector cost estimate for 189
 650 Inspector cost estimate for 63
 651-654 Petition for 58
 655-659 Inspector report and Petition for 208
 660 Inspector report for 172
 661 Inspector cost estimate for 168
 662 Inspector cost estimate for 165
 663 Inspector cost estimate for 158
 664-668 Petition and cost estimate for 1a
 669-674 Summary of petitions, 1/26/1920, 16 for Aguadilla, 1 for Mayagüez
 675-679 Summary of petitions
 680 Letter regarding 298
 681 Summary petitions

Caja 161, Legajo 208, Folder 1

Image #, Description

Aguadilla

Letters of rejection for various reasons not listed. Some are due to “no damage” so might be useful. Some are denials for submitting forms after the deadline (appears to be before Jan. 1921- probably Oct. 1920, 2 years after the earthquake).

9-12 petition 328 (?)

Petitions denied for “suffering no damage”

322 336 333 (prior bad condition) 135 245 134 253 325 303 327 255 261

duplicate petitions : 244 321 (same as 305, both denied)

bogus petition: 316 335 334 324 139

59-64 petition and Inspector cost estimate for 329

67-68 List of petitions, Aguadilla and Aguada, 10/16/20

70- Letter from Commissioner to Governor, info on program, number of petitions, etc.

89-91 List of repaired/destroyed houses by neighborhood, Aguadilla

216-223 petition 325.12, note attached “denied for lack of funds”
229 203 denied as “house” was a “business kiosk”
256 re 302 – damaged beyond repair, house was very old.
301-306 List of petitioners and numbers for obrero barrios, aguadilla
307-308 List of number of petitions from each town, dated 9/9/1919. Ley 8 gave \$60,000 to the relief effort. 846 petitions have been processed, and 466 are waiting.

310-311 List of petitions, names, barrio and street, for Aguadilla, 9/12/1919
318-321 List of petitions, names, barrio and street, for Aguadilla, 1/24/1920
338-339 List of compensated petitioners, 11/15/1920
344-346 List of approved petitions and amounts, in english, 1/12/1921 also list of rejected petitions and reasons

351 – 371 General accounting of claims and payments for all towns, 1/27/1921. total considered, denied (29% denial rate), number of houses repaired and replaced in each town, and cost. Total spent ~ \$103k. Detailed reasons for denial.

436-444 damage reports for Aguas Buenas tobacco factory, 11/8/1918
451-453 Damage reports for municipal building (Corte de Distrito) in Arecibo, 10/9/1918
454 Damage report for Roses distillery, Arecibo, 10/18/1918
479 Petition 1 , Arecibo
483-484 map of Barriada Obrera, Aguadilla
487 Damage report from Arroyo

Caja 161, Legajo 208, Folder 2

Image #, Description

9-16 Loans to various homeowners
29 Letter appropriating \$15k for new Añasco town hall, which was destroyed.
31-45 Proclamation (english) establishing eq relief measures. Passage of Ley 8, 12/12/1918
47-55 Infrastructure damage estimates (bridges, roads, docks)
64-72 Initial damage report (english) 10/18/1918, actions taken
91 letter from Bank of Canada, donating \$5000, 1/4/1919
113 Damage report for warehouse Inocencio Charneco, Aguada
132-136 School damage reports, 10/17/1918
154-185 Damage estimates for island from Public Works (bridges, culverts, telegraph lines/offices, customs houses, hospitals, barracks, forts)
203 damage to churches, from Bishop of PR, 10/28/1918
280-282 Description of petition reimbursement program, in english, 7/29/1919
288- Account of disposition of petitions, 4/30/1920
302 Account and description of disposition of Aguadilla petitions (english), and resettlement program 4/28/1920
314- cost of repairs to Lafayette school, Aguadilla (english)
337-339 Account of money spent to repair island-wide schools, municipal buildings
396-413 Final report to Earthquake Board (english), 1/27/1921 details of petition program

Caja 162, Legajo 209, Folder 1

Image #, Description

1 folder cover
2-7 petition 1 Añasco
8-13 petition 156
14-19 petition 2
20-30 petition 154
31-43 petition 149
44-48 petition 3
49-53 Petition 137
54-58 Petition 8
59-63 Petition 9
64-68 Petition 4
69-73 Petition 5
74-78 Petition 6
79-83 Petition 150
84 petition 6
85 petition 7
86-90 petition angel Aquino
91-93 petition maximo arroyo
94-98 petition 10
99-104 petition 11
105-109 petition 12
110-114 petition 13
115-119 petition 14
120-125 petition 15
126-130 petition 16
131..... petitions 17,18,19,20,21,22,165,140,24,25,7,26,167,27,28,29,23,30,90,31,32,33,
144,34,38,132,151,35,36,37,38,39,114
421 summary names, pet #, cost,
472 names streets, pet no.
490 pet # by street, damage summary

Caja 162 Legajo 209 Folder 2,

Image #, Description

Petitions
65,66,67,157,148,167,158,68,69,70,71,72,73,145,74,75,146,76,77,263,40,134,42,41,43,155,52,53,54,
141,44,45,46,55,47,56,57,48,49,50,135,51,58,59,60,61,62,63,64

Caja 162 Legajo 209 Folder 3,

Image #, Description

Petitions 108,109,110,111,159,166,112,160,113,115,116,164,117,118,119,131,153,1
20,121,122,123,124,125,126,143,127,162,136,128,133,129,130,139,172

Caja 162 Legajo 209 Folder 4,

Image #, Description

Petitions 78,79,80,81,82,83,84,85,86,87,88,89,152,91,147,92,93,37,169,94,142,95,161,96,
97,98,999,100,101,106,107, 102, 103, 104, 105

Caja 163, Legajo 210

Image #, Description

1 cover
2 city folder Rio Grande
3-4 telegrams damage
5 letter
6 city folder Rio Piedras
7-19 letters about damage
20 city folder San Sebastian
21-letters and petitions
37 city folder Lares
38 telegram
39 city folder Lajas
40-57 letters and petition
58 city folder Juncos
59-77 letters about damage
78 city folder Juana Diaz
79-101 letters, memos and one telegram
102 city folder Humacao
103-123 letters about damage, one telegram
124 city folder Gurabo
125-127 letters
128 city folder Guayama
129-131 letters
132 city folder Guanica
133-149 letter about damage and one telegram
150 city folder Fajardo
151-158 letters, one telegram
159 city folder Ceiba
160-172 letters and one petition
173 city folder Carolina
174-letter
175 city folder Camuy
176-184 letters and two telegrams
185 city folder Bayamon
186-200 letters and one telegram
201 city folder Cabo Rojo
202-209 letters and one telegram
210 city folder Barceloneta
211-212 letter

213 city folder Utuado
214-252 letters and petitions
253 city folder Las Piedras
254-256 letters and telegram
257 city folder Moca
258-259 letters
260 city folder Manati
261-262 letter
263 city folder Maricao
264-267 letter and telegram
268 city folder Naguabo
269-271 letters, telegram
272 city folder Ponce
273-325 documentation of damage by letter and telegram, list of felt aftershocks
326 city folder Ponce (2)
327-335 letters and petitions
336 city folder San German
337-353 letters and telegrams
354 city folder San German (2)
355-357 letters
358 city folder Sabana Grande
359-366 letters
367 city folder San Juan
368-408 letters
409 city folder San Sebastian
410-428 letters
429 city folder San Lorenzo
430-431 letter and telegram
432 city folder Santa Isabel
433-456 letters
457 city folder Utuado
458-478 letters
479 city folder Utuado (2)
480-481 letter
482 city folder Vega Baja
483-484 letter and telegram
485 city folder Toa Alta
486-488 letter
489 city folder Vieques
490-495 letters

Caja 164, Legajo 211, Folder 1

Image #, Description

3 list of houses repaired by owner
5-21 list of petitioners for Mayagüez

35 repair budget
 38-39 list of houses to repair with letter
 56-61 List of new homes built in different site
 66 work at correctional
 93 list of house repaired and approved
 95 letter about petitions 193, 248, 166
 100 list of payments
 103-104 petition 59 Catalina Feria rejected “Segun informa dicho inspector esta es una pequena casita de 10’ X 9’ con setos de lata. La casa no sufrió nada con los temblores y su mal estado se debe a los materiales de que esta construida a la clase de construcción y al tiempo; pero en este mismo estado estaba antes de ocurrir los temblores...”
 107-110 houses far out of town
 114 some approved petitions
 116-117 report on some damage in Mayagüez – Vicente(1918, letter to Finlayson 10/29/1918 2 pages) “... Public works office in the Playa is in perfectly good shape, but the passenger pier is a complete wreck the only thing left of it is the galvanized iron roof that was carried about a hundred feet inland by the wave and most of the piling is left; the loading pier has the floor loose in some places and about 6ft. of the end is gone, the floor as a whole is pretty well rotted; all the wreckage of both piers is laying around the streets of the playa and as well all these timbers are decayed...”
 ...” The Degetau Building of the College is getting worse with each quake and I would sugest [sic] to remove the upper part of the walls or to prop them up as they are getting out of plumb more each day and the cracks are extending to the first floor in the heavy last shake one of the columns in the second floor came to the ground...The Science building suffered some more with the last shake the hy-rib partitions in the second floor are badly cracked and loose from the main walls. The hy-rib partition between the stair case and the room above the Dean’s office was so badly damaged that all the plastering had to be removed to prevent accident in going up the stairs the hy-rib is still in place. The main wall on the north side, west wing is about an inch out of plumb.”
 118-127 petition 10, Angel Allende
 129 letter about house of Ignacio Charneco
 130-145 letter (jan 13, 1919) by commissioner (with attachments) about streets in Mayagüez. “...The use of debris was justified to a certain extent to repair the streets, but this work should have been done in an efficient manner taking care to consolidate the materials as the fill progressed. This was not done and it shows that the work was very poorly organized.” Attachments give eye witness report of condition of streets and debris from demolitions.
 147-149 Plant fumigation house - condition– damaged by tidal wave-door smashed and removed from foundation
 150-155 buildings dangerous to the public and torn down or to be torn down
 157-161 playa school repair
 163-164 status of schools – report
 167-170 schools
 171 houses built at new site
 189 checks to petitioners
 200-216 not to build more houses on bank of river
 217 construcion- Buenos Aires
 218-219 Ulpiano Rosas letter but not format petition form
 226-228 status of petitions

245-246 list of checks for petitioners
259-260 list of petitioners to get donations
263 list of houses repaired
267 list of checks
270-271 houses in campo rejected
272-273 list of houses repaired
280-286 petitions approved and denied
287 status of some petitions
289-293 mayor- letter about reconstruction, list of home and type of prefabs coming from US.
294-296 list of houses repaired
298 petition 303 Paula Abelle
303-311 petition 001 Filomene Abrante- petition (rejected)
312-316 petition 002
317-323 petition 003
324-328 petition 004
329-334 petition 005
335-340 petition 006
341-345 petition 007
346-351 petition 008
352-357 petition 009
358-362 petition 011
363-368 petition 232
369-375 petition without number
376-381 petition 012
382-390 petition 305
391-395 petition 013
396-404 petition 014
405-410 petition 015
411-415 petition 289
416-421 petition 304
422-428 petition 016
429-437 petition 307
438-442 petition 306
443-447 petition 017
448-452 petition 018
453-460 petition 019
461-469 petition 233
470-474 petition 020
475-478 petition 021
479-483 petition 234
484-487 petition 022
488-492 petition 023
493-497 petition 024
498-501 petition without number
502-507 petition 290
508-512 petition 025

513-517 petition 026

518-529 list of petitions approved, denied, list of materials

Caja 164, Legajo 211, Folder 2

Image #, Description

1 cover of folder

2 petition 61

8 petition 27

13 petition 28

21 petition 29

26 petition 30

30 Petition 31

36 petition 32

44 petition 33

50 petition 34

54 petition, no number, Petrona Cardona

58 petition 235

62 petition 308

67 petition 35

72 petition 36

78 petition 37

85 petition 38

90 petition 40

95 petition 41

100 petition 42

105 carta a asuncion Coma

106 petition 291

111 petition 309

117 petition 310

122 petition 44

127 petition 236

132 petition 45

137 petition 237

142 petition, no number, Carmen rita cueabas

146 petition 46

154 petition 47

160 petition 48

165 petition 49

171 petition 39

177 petition 239

182 petition 43

187 petition 238

192 petition 118

197 petition 81

201 petition 96

206 petition 50
211 petition 51
216 petition 52
226 petition, no number, Asuncion Dulieve
230 petition 53
238 petition 54
243 petition 55
248 petition 56
260 petition 57
269 petition 58
274 petition 59
280 petition 60
285 petition 240
290 petition 241
296 petition 292
301 petition 242
306 petition 62
311 petition 243
316 petition 244
321 petition 245

Caja 164, Legajo 211, Folder 3

Image #, Description

1 folder cover
2 petition 90
6 petition 91
11 petition 92
16 petition 95
21 petition 94
26 petition 85
31 petition no number, Antonia Lassus
35 petition 84
40 petition 293
46 petition 82 Leoncio Jimenez
56 petition 78
65 petition 249, part of documents
66 petition no number Inocencia Henriques
70 petition 249 rest of documents
75 petition 79
85 petition 80
90 petition 70
95 petition 311
100 petition 247
105 petition 74
116 petition 75

121 petition 76
126 petition 248
132 carta a leoncio Jimenez
133 carta de Leoncio jiminez
137 petition 71
142 petition 72
148 petition 246
153 carta de evangelista gonzalez (part of petition 73?)
154 petition 73
159 petition no number, Dominga Garotti
163 petition 69
168 petition 63
173 petition 64
178 petition 65
183 petition 66
189 petition 67
194 petition 68
199 petition 83
203 petition 254
208 petition 95
213 petition 86
218 petition251
224-250 petition 87
237 photo of two girls
238 photo of two girls
239 back of postcard 1913
240 picture of man
241 back of postcard
242-243 inscription card and back
244-249 letter from jose lebron Cabrera (petition 87)
250 letter to/from jose lebron Cabrera (petition 87)
253 petition 252
258 petition 253
264 petition 89

Caja 165, Legajo 212, Folder 1

Image #, Description

1 cover
2 petition 149
7 petition 157
12 petition 142
16 petition 162
20 petition 156
25 petition 155
31 petition 298

36 petition 152
40 petition 147
45 petition 148
50 petition 146
55 petition 141
59 petition 139
64 petition 263
69 petition 137
74 petition 144
87 petition 264
92 petition 136
97 petition 262
102 petition 140
108 petition 134
113 petition 297
118 petition 265
124 petition 145
129 petition 261
134 petition 317
140 petition 143
145 petition 153
150 petition 135
155 petition 296
161 petition 138
167 petition 150
173 petition 151
179 petition 154
184 petition 158
190 petition 159
195 petition 160
201 petition 161

Caja 165, Legajo 212, Folder 2

Image #, Description

1 cover of folder
2 letter denying petition #258, house not damaged, being moved
3 letter about petition#258
4 inspector report #258
5 petition 258
9 petition 314
14 petition 115
19 petition 114
24 petition 256
29 petition 109
34 petition 105

39 petition 97
45 petition 98
51 petition 255
56 petition 312
62 petition 99
71 petition 100
76 petition 101
81 petition 102
86 petition 103
92 petition 104
98 petition 294
103 petition 106
109 Aureliano Martinez- request, no petition number
118 petition 107
123 petition 108
127 petition 295
132 petition 110
137 petition 111
142 petition 112
147 petition 113
157 petition 116
162 petition 117
168 petition 257
174 petition 119
179 petition 120
182 petition 121
187 petition from Cruz Mercado—no number
191 petition 122
196 petition 123
202 cartas sobre Tomasa Mercado
206 petition 124
210 petition 259
216 petition 315
221 petition 125
229 petition 126
234 petition 127
239 petition 128
254 petition 129
259 petition 130
264 petition 265
269 petition 313
274 petition 316
282 petition 132
287 petition 133
291 petition 260

Caja 165, Legajo 212, Folder 3

Image #, Description

1 cover of folder
2 petition 231
6 petition 230
11 petition 228
16 petition 229
20 petition 287
25 petition 326, incomplete
29 petition 286
35 petition 285
41 petition 226
46 petition 282
52 petition 88
57 petition 232
62 petition 224
66 petition 217
71 petition 216
76 petition 214
81 petition 210
86 petition 211
91 petition 207
96 petition 206
100 petition 279
104 petition 288
109 petition 302
114 petition 227
120 petition 284
133 petition 283
138 petition 225
143 petition 220
149 petition, no number
154 petition 215
159 petition 280
165 petition 277
169 petition 205
175 petition 275
180 petition 276
185 petition 278
193 petition 324
198 petition 325
204 petition of Francisca Sepulveda, no number
212 petition 207, incomplete
213 petition 321
218 petition 208

223 petition 209
234 petition 212
240 petition 213
246 petition 322
252 petition 77
257 petition for Antonia Fora, no number
261 petition 218
266 petition 219
271 petition 221
277 petition 218, incomplete
278 petition 222
283 petition 223
289 petition 281

Caja 165, Legajo 212, Folder 4

Image #, Description

1 cover of folder
2 petition 319
8 petition 197
12 petition 196
16 petition 184
22 petition 182
27 petition 269
33 petition 268
37 petition 169
46 petition 170
52 petition 177
57 petition 267
62 petition 174
67 petition 175
72 petition no number, Pia Rivera Marbell?
77 petition 178
81 petition 180
86 petition 181
91 petition 179
96 petition 176
101 petition 299
107 petition 172
112 petition 173
117 petition 171
122 petition 168
126 petition 163
132 petition 164
137 petition 266
143 petition 165

148 petition 166
153 petition 167
159 petition 183
169 petition 185
174 petition 186
178 petition 187
183 petition 188
188 petition 318
193 petition 270
198 petition 189
204 petition 190
208 petition 192
216 petition 191
220-225 cartas a tula rodriguez, petitions 187 or 60
226 carta sobre peticiones 32 y 193
228 petition 193
233 petition 194
237 petition 195
242 petition 199
247 petition 198
253 petition 200
259 petition 300
265 petition no number Dolores Ruiz de Garcia
269 petition 271
274 petition 320
279 petition 201
284 petition 202
289 petition 203
295 petition 272
301 petition 273
306 petition 301
311 petition 274
316 petition 204

Maps

Maps of the era for Aguadilla and Mayagüez were identified and arrangement made to be copied. Maps of the town for Aguada and Añasco were too general as they did not indicate location of major streets and, therefore, were deemed not useful for this project.

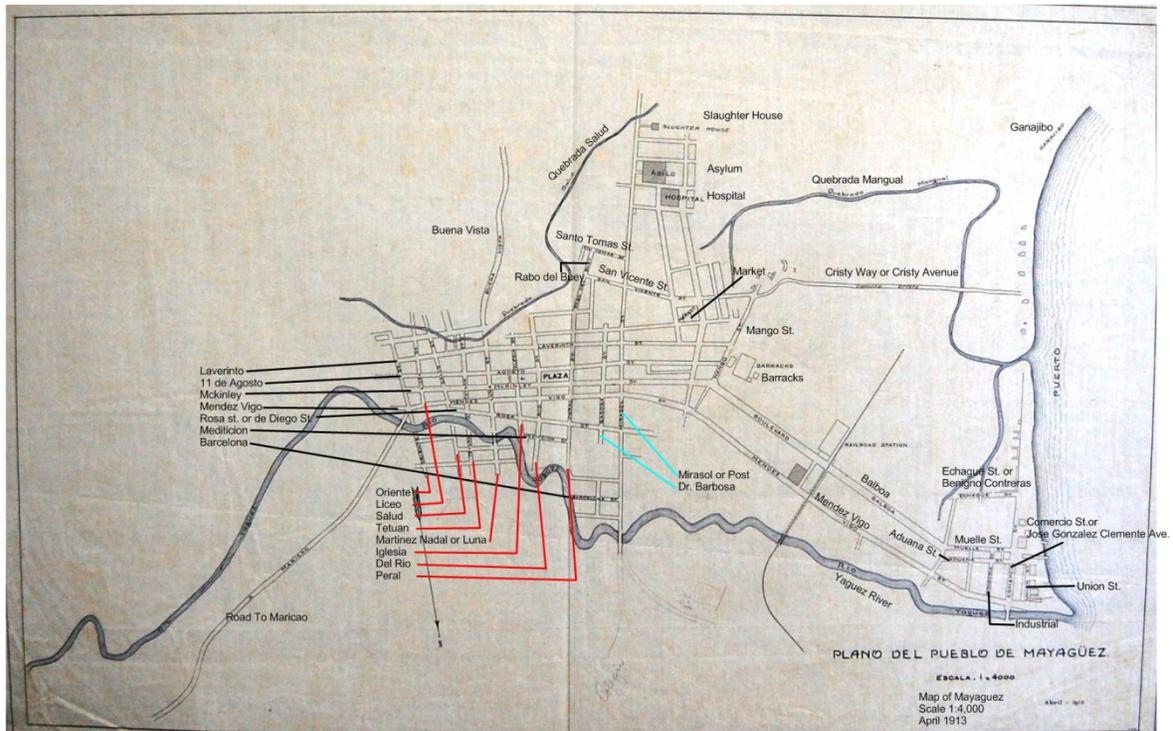


Figure 1. Mayagüez 1913. North is down, West is to the right.



Figure 2. Aguadilla. North is to the right.

PHOTOGRAPHIC ARCHIVE-

All photos of the era were examined to determine utility for this project. One private collection contained photos of severely damaged buildings, but the images are apparently of a

volcanic eruption in the Lesser Antilles. Two private collections were found useful for our effort. These photos may not be used for commercial purposes. Any time they are copied the photo archive must be informed. The Geiling collection are photos which we have never seen before, but unfortunately did not contain any indication of where the photos were taken, limiting their utility for our purposes. The Bosch de Diaz collection contains 35 photos, many of which are commonly known by those familiar with photos of the 1918 earthquake.

Table 3. Index of Photos from the Photographic Archive

Private Collection of Belen Rodriguez Bosch de Diaz

These images have restrictions on reproduction, see text for details. Number refers to page in PDF file.

| Number | Description |
|---------------|--|
| 1 | Mayagüez Puente Salida a Añasco |
| 2 | Mayagüez Houses in the water |
| 3 | Mayagüez House in the water |
| 4 | Mayagüez Branch of La Habanera |
| 5 | Mayagüez La Habanera |
| 6 | Mayagüez La Habanera |
| 7 | Mayagüez The Texas Company |
| 8 | Mayagüez The American Grocery |
| 9 | Mayagüez Punta brava |
| 10 | Mayagüez La Marina |
| 11 | Mayagüez Calle La Rosa (presently Calle Jose de Diego) |
| 12 | Mayagüez Calle Concordia- Marina |
| 13 | Mayagüez Calle Peral |
| 14 | Mayagüez Los Diablos |
| 15 | Mayagüez Buenos Aires |
| 16 | Mayagüez La Mallorquina |
| 17 | Mayagüez La Palma |
| 18 | Mayagüez La Plama y.... |
| 19 | Mayagüez Calle Iglesia |
| 20 | Mayagüez Calle Candelaria |
| 21 | Mayagüez Calle Candelaria |
| 22 | Mayagüez Casino |
| 23 | Mayagüez Banco Colonial y Aduana |
| 24 | Mayagüez Aduana |
| 25 | Mayagüez Banco Colonial |
| 26 | Mayagüez Hospital Presbiteriano |
| 27 | Mayagüez Colegio de Agricultura-Chemical Laboratory |
| 28 | Mayagüez Alcaldía |
| 29 | Mayagüez Hospital Presbiteriano |
| 30 | Mayagüez Hospital Municipal |
| 31 | Mayagüez? Farmacia Salina y escuela de la hermanas |

| | | |
|----|-----------|----------------------------------|
| 32 | Mayagüez | Casa de Dr. Llavat y consistorio |
| 33 | Mayagüez | Central Telefónica |
| 34 | Mayagüez | Escuela Playa |
| 35 | Mayagüez? | Monjas y padres |

Private Collection of Gladys and John Geiling

These images have restrictions on reproduction, see text for details.

There are a total of 20 images. Number refers to page in PDF file.

| Number | Description |
|---------------|------------------------------------|
| 1-8 | Earthquake damage, town(s) unknown |
| 9-10 | San Juan? |
| 11-13 | Earthquake Damage |
| 14-16 | People |
| 17-18 | Earthquake Damage |
| 19-20 | People |

NATIONAL LIBRARY-

The National Library contains three important documents, one of which we did not know existed.

- 1- The “Informe del Comisionado del Interior” is a regular report from the local Commissioner of Puerto Rico to the Federal Government in Washington D.C. It contains information on the damage caused by the 1918 earthquake to public structures and numerous good examples of the type of construction completed in that year. Sixty-Three images of that document were captured.
- 2- Puerto Rico Ilustrado- “Puerto Rico Ilustrado” was a regular publication on the island. It contains articles and pictures of local events. There are numerous editions with text discussing the effects of the 1918 earthquake accompanied by many photos. Pages from 8 issues were captured. Images are of articles, groups of photos, then detailed photos of each image.

Table 4. Images of “Puerto Rico Ilustrado”

All numbers refer to pages in PDF file

| Number | Description |
|---------------|--------------------|
| 1 | cover |
| 2 | text |
| 3 | photos |

- 4 Alcaldia Mayagüez calle McKinley mirando hacia el mar (oeste)
- 5 Warehouse of West India Oil Co.
- 6 Centro Español adjacent to Plaza Colon
- 7 House of Don Angel Rodriguez
- 8 Red cross
- 9 Church Aguada
- 10 text
- 11 Church Mayagüez looking across Plaza Colon to the NE
- 12 Casa de Don Juan Bianchi, American Colonial Bank, Correo de la Marina
- 13 Fabrica de Cigaros La Habanera
- 14 La Aduana (rt), American Colonial Bank (left) “un automóvil, embalado, y conducido por una embarcación. Fue echada a tierra.
- 15 Photos as in 13,14
- 16 Photos
- 17 RUM Chemical Building
- 18 Chimenea de la Central Cambalache- Arecibo
- 19 Chimenea de la Central Cambalache- Arecibo
- 20 Arecibo street
- 21 Church Isabela
- 22 Ayuntamiento (City Hall) Aguadilla
- 23 Photos
- 24 Telefonica Mayagüez
- 25 Seccion comercial del Liceo (PR-349)- frente la casa commercial Torrellas (see Duran paper page 43)
- 26 Casa de Don Cancio Ortiz...en el oeste de la calle McKinley (antes del cruce con el camino nuevo, hoy la calle post [PR-2r]—Duran)
- 27 Photos
- 28 Puente de Barcelona Mayagüez--- carretera de Añasco
- 29 Casa un la bahía “fue lanzada a la corriente impetuosa del rio”
- 30 Photos
- 31 Intersection calle del Rio y la Rosa (hoy en dia se llama calle de diego), (rt) ruinas del antiguo “liceo de Mayagüez” hoy (1918) Colegio de los Padres Redentoristas... junto a ella se ve los escombros del “casino de Mayagüez” y del “centro Espanol”.. Café La Palma. View is at calle ?? looking down calle ?? looking to the ??
- 32 Red cross
- 33-35 Mayagüez Aduana-blasting
- 36 Earthquake proof house
- 37 Photos
- 38 Photo
- 39 Casa en calle de la reina en Mayagüez o San German??
- 40 Casa esquina del a Marina y Aurora, Ponce
- 41 Casa de Don Guillermo Schuck, Ave. Hostos, Mayagüez
- 42 Ruinas fabrica de calados Mayagüez??
- 43 Porto Rico Iron Works Co, Playa, Magauetz?
- 44 Casa en Avenida de Hostos
- 45 Photos

| | |
|----|--|
| 46 | Ayunatamiento de Aguadilla, school was on 3rd? floor |
| 47 | Red Cross |
| 48 | photos |
| 49 | Aguadilla tsunami |
| 50 | Añasco, Alcadia |
| 51 | Photos |
| 52 | Mayagüez Plaza Domingo, Misa |
| 53 | Mayagüez? Prayers in the street |
| 54 | Añasco |
| 55 | Photos |
| 56 | Red cross |
| 57 | Mayagüez Plaza prayers |
| 58 | Photos |
| 59 | Aguadilla |
| 60 | Photos |
| 61 | Rear of Customs House Mayagüez being blasted |
| 62 | Blasters |
| 63 | Photos |
| 64 | Aguadilla District Court House |
| 65 | Añasco – home guard |
| 66 | Photos |
| 67 | Templo de Añasco (200 year old) |
| 68 | Red cross |
| 69 | Photo |
| 70 | Photo |
| 71 | Mayagüez Casa de Lic. Angel Acosta y Quintero |
| 72 | Photos |
| 73 | Añasco Porto Rico Pharmaceutical & Specialty |
| 74 | Aguadilla Municipal court |
| 75 | Aguadilla building “El Fuerte” |
| 76 | Photos |
| 77 | Mayagüez pulling seaward houses pushed inland by seawave |
| 78 | Survivor of tsunami |
| 79 | Photos |
| 80 | Photos |
| 81 | Aguadilla antiguo cuartel “la Concepcion” – escuela Baldorioty |
| 82 | Mayagüez or Aguadilla? calle Betances- house of Don Carlos Igartua |
| 83 | Mayagüez Custom House |
| 84 | Añasco tents |
| 85 | Photos |
| 86 | House of “Luz de Borinquen” |
| 87 | Mayagüez casa de la ave. Hostos esquina calle de Pówer |
| 88 | Mayagüez call mendez vigo esquina Vives |
| 89 | Cpver photo |
| 90 | Photos |
| 91 | 1867 |

| | |
|-----|---------------------------------|
| 92 | 1867 |
| 93 | 1867 |
| 94 | Photos |
| 95 | Guayama |
| 96 | ¿? |
| 97 | Arroyo |
| 98 | Naguabo |
| 99 | Naguabo |
| 100 | Cover |
| 101 | Photos |
| 102 | Aguada Church |
| 103 | Aguada Chruch |
| 104 | Aguada new chruch |
| 105 | Cover |
| 106 | photos |
| 107 | Añasco |
| 108 | Aguadilla |
| 109 | Aguadilla |
| 110 | Añasco |
| 111 | Aguada |
| 112 | Photos |
| 113 | Mayagüez cruz roja |
| 114 | Aguadilla tents |
| 115 | Mayagüez cruz roja |
| 116 | Aguadilla Escuela Presbiteriana |
| 117 | Añasco tents |
| 118 | Cover |
| 119 | Text |
| 120 | Aguadilla tent city |
| 121 | Cover |
| 122 | Photos |
| 123 | Mayagüez tent city |
| 124 | Añasco |
| 125 | Photos |
| 126 | Añasco tents |
| 127 | Añasco tents |
| 128 | Naguabo |
| 129 | Naguabo |

3- The real surprise was the discovery of an original copy of the “Report by the Construction Division of the Army on Damage Done in Porto Rico, 1918 Caused by Earthquake”. All 146 pages were copied. It contains a town by town report of the earthquake effects on Federal Buildings on the island. The authors of the report visited 56 cities. It contains numerous original photos and engineering drawing of structures.

Table 5. Summary of Information from Commissioner's Report

Page numbers are those in book, those in parenthesis are pdf page numbers.

p12 San Juan

p13

Federal Buildings

The new federal building, housing the post office the customs office and the federal courts, a beautiful and appropriate building, was undamaged.

Old Spanish Barracks (Calles Norzagaray & San Jose)

The federal government inherited from the Spanish regime and later reserved for military purposes a large number of military buildings. Many of these are grouped along the fortifications; others are in various parts of the city. This commission inspected thirty of these buildings, including all the more important structures. With the exception of the Old Spanish Barracks, these buildings suffered practically no injuries from the earthquakes.

These structures are in the charge of the U.S. corps of engineers. Necessary repairs are made as soon as needed and reports of damage sustained are regularly made by the engineers through military channels.

...The roof of the old Spanish barracks at san juan, which is to be used as regimental headquarters for the Porto Rico regiment, was cracked to some extent and much of its pavement has since been re-laid.

Skip to Mayaguez page 36

Page 39 (46)

Practically all of the older buildings of Mayaguez were destroyed or seriously damaged. Thirty-seven people were killed and 141 were seriously injured. One hundred thirty-four masonry houses and other buildings were totally destroyed; 476 masonry buildings and 133 buildings of other construction were injured, and over 4,000 people rendered homeless, most of them still without permanent shelter.

Custom House. The custom House at Mayaguez Playa or Port was a two story building, of ancient masonry construction, about 50' X 66'. The ground floor was occupied by the Customs office and the office of the Immigration service, the port post office being housed in a rented building adjacent. The Custom House is so injured, that, if a two story building is necessary, the building should be considered a total loss.... This commission estimates that it is feasible to cut off the damaged second story wall and repair the first story walls.....[(photo- informe del comisionado de interior- pdf18)]

Page 40 (47)

Custom House Pier Shed. The Customs House property also includes a pier shed about 50' X 150' which is of open structural steel construction and now temporarily houses the Customs Officers, and is also used as a Customs warehouse. This shed is roofed with corrugated iron, which needs to be renewed as it is leaking badly; the floor of concrete was badly cracked by the earthquake and should be re-laid.

Mayaguez Barracks, property of the Federal Government, is a huge structure, of massive construction, with wood floors, and has been recently occupied, in part, by the insular courts. It has a beautiful location facing the sea, and is surrounded by ample grounds. The principal damage consists in the loss of the cornice and coping, in part, and roof damage. Secondary damage was done by rain which entered through the roof defects.

Page 41-42 (48-49)

Old Military Hospital, Mayaguez. This is an old one-story building about 150' X 170'. It is a federal property but has been recently occupied by the insular authorities as Roosevelt Public School under a lease which provided for the school authorities to keep same in repair. The building is of very light masonry construction, built about 1896. The walls and partitions were damaged to some extent.

College of Agriculture and Mechanical Arts. Among the many Municipal and Insular buildings destroyed and damaged, particular mention should be made of two buildings of the College of Agriculture and Mechanic Arts. The Chemical Laboratory was destroyed by an explosion of chemicals and a fire which followed. The Science Building was cracked to some extent and the rear walls are bulging, but can be safely restored and will be repaired by the school authorities.

Program of Reconstruction for Mayaguez. Although stunned by the calamity which has befallen them, the citizens of Mayaguez have begun the reconstruction of their municipal and public works. ... new city hall (photo- informe del comisionado de interior- pdf17), ... municipal hospital (photo- informe del comisionado de interior- pdf13), asylum for poor... repair municipal theatre.. Repair sidewalks and pavements... reconstruction of minor buildings... repair of bridges (photo- informe del comisionado de interior- pdf14),..

Page 44-photo- customs house

Page 45-photo-old Spanish barracks

Page 46-47-photo old military hospital

Page 48-photo- courthouse, city hall, plaza stores

Page 49- photo- chemical laboratory

Page 50 Aguadilla

Aguadilla, a port town of 6135 inhabitants, is situated on the west coast of the islands; it was in the center of the disturbed area and suffered from the earthquake shocks severely.

Two hundred forty houses were destroyed or seriously damaged by the earthquake and the tidal wave which succeeded it. The estimated property loss, according to the Insular authorities and in which this Commission concurs is \$300,000.

Forty-six lives were lost and about three hundred people seriously injured in the disaster; 1500 were rendered homeless and at the time of the visit of the commission, owing in large measure to lack of necessary assistance, little has been done to relieve the destitution. Plans are being formulated by the municipal authorities for the construction of inexpensive frame houses to replace those destroyed, but requisite funds are lacking for any extended program of immediate relief.

The only Federal owned property in Aguadilla consisted of the old Spanish Fort and Barracks (photo- informe del comisionado de interior- pdf10), leased by the insular authorities and used as a local Manual Training and High School. It consisted of a two-story and a one-story wind,

connected by a wall and gate house, all constructed of brick with stuccoed exterior and wood joist and ceilings. The two-story wing is entirely destroyed, but two exterior walls remaining; the one-story wing, used for manual training, is practically uninjured. It is not considered advisable that the destroyed portion be reconstructed...

[The following is pertinent historic information about the fort obtained from:

<http://haydeereichard.blogspot.com/2009/04/memorias-militares-de-borinquen-field.html>

Con el arribo de los norteamericanos el Fuerte se convertido en su Cuartel militar, pero muy pronto al irse las tropas se estableció una escuela que llegó a ser la Escuela Superior Lafayette de Aguadilla. El 11 de octubre de 1918, un terremoto hizo lo que ningún inglés pudo, destruirlo aunque no en su totalidad, ya que del segundo edificio del Fuerte, quedaron en pie las gruesas paredes, ya que el techo se desplomó con el sismo. En 1925 se techó con zinc y se hizo un piso en cemento, habilitando salones para la Aguadilla High, luego pasó a ser la Escuela Intermedia Rafael Del Valle y Rodríguez { calle Agustin Stahl} . Hoy (2009) sólo queda un pequeño edificio que fue utilizado como salón y vestigios de la muralla que daba al mar.]

Local Plan for Consolidation. In view of the destruction of all buildings in the town which housed the Federal, Insular and Municipal activities, a plan has been formulated for a joint building to be erected on the plaza, on a site to be supplied by the town, to house the post office, Custom House, and all other insular and Municipal office. ...

The Custom House and Post Office were in rented buildings which were destroyed; all Municipal Buildings, Town Hall, (photo- informe del comisionado de interior- pdf 9), District Court, Jail, Market and other buildings occupied by the Insular Government were destroyed.

Page 54-58 photos

Page 54-old Spanish barracks

Page 55-cityhall, court, custom house

Page 56 church

Page 57 church- made during second earthquake—steeple falling

Page 58 church, warehouse, market

Skip to page 68 (75) Añasco

Page 69 (76)

Añasco, an interior town, with a population of 3060, has no Federal or Insular Buildings. Here the destruction of property was most complete, the town suffering more than any other in total devastation. The church and town hall were entirely destroyed; the post office (a rented building) was wrecked, and scarcely a masonry building escaped almost total destruction. A single exception was a two-story reinforced concrete building which came through with scarcely a crack. Fifty-three buildings were totally destroyed and 223 others were seriously damaged. The total property loss is estimated by the local authorities at \$223,325. Eight persons were killed and fourteen seriously injured at Añasco, Twenty five hundred people were rendered homeless, of whom it is estimated that 1,800 are still without shelter. Public schools are being conducted in temporary wooden shacks erected on the Plaza.

Page 70-photo city hall, post office, Presbyterian church

Page 71 (78) Aguada

...A large church was totally destroyed, the town hall wrecked... Five persons were killed and three seriously injured. Fifty-nine houses were destroyed and eleven other materially damaged. On-half of the population (1,000 is estimated population) were rendered homeless and are, in the main, still without shelter.

Skip to page 76 (83)

The Lighthouse service

Two lighthouses were totally destroyed and five other injured. These damages have been estimated by the lighthouse service at \$116,000 and repairs are being made and rebuilding being done under emergency appropriations direct from the Department of Commerce in Washington.

Skip to page 78-79 (85-86)

Summary

Skip to page 120 (146)

Report of Porto Rico Department of Education on Damages to School Interests by Earthquakes in 1918. (Miller, 1919)

Aguada. The Narcisco Gonzalez Font School has suffered damages amounting to \$200.00.

Aguadilla. Two school rooms installed in the third floor of the city hall were completely destroyed and children killed and many other injured. The building belonging to the Federal Government in which the high school was located is a total loss. Lafayette School was damaged to the extent of \$1200.00 A rented house on the Marina was completely destroyed.

Anasco- The Hostos and Ramirez de Arellano schools have suffered serious damage and are not fit for use.

.... Mayaguez- Graded school No 2. Known as the playa school was totally destroyed. This was a six room building to which the school board was adding a two room addition. The original building was erected from cement blocks and the addition of reinforced concrete. The addition does not show any cracks whatever, whereas the cement block structure was leveled to the ground. The Roosevelt School is located in a building belonging to the Federal Government, constructed of brick in laid between wooden uprights (photo- informe del comisionado de interior- pdf11). The school board of Mayaguez has spent some \$2500.00 of repairs before schools were opened August. The damage to this building consisted in the shaking out of bricks and the falling of plaster. The School board has made necessary repairs on this Federal Building from its own funds so as to make possible the use of ten school rooms. Two rural school buildings in the barrio schools also constructed of cement blocks were totally destroyed. The new high school and the new grammar school which are built of reinforced concrete suffered very little damage which consists of cracked partitions and the falling of blackboards (photos- informe del comisionado de interior- pdf4-5).

The Degetau Building belonging to the College of Agriculture and Mechanic Arts was destroyed by fire which broke out as a result of the first shock. The Science building has received several large cracks, damage to partitions and the north wall was shoved out about two inches. Skip to page 116 (123)

...Buildings properly constructed of reinforced concrete have stood the earthquake shocks well as is evident from an inspection of the buildings in Mayaguez. Cement block, brick and rubble work do not resist comparatively slight shocks....

...Loss of Life and Rescue Work

The first earthquake occurred on October 11 and destroyed a large part of the towns of Aguadilla, Aguada, anasco and Mayaguez. The total number of persons who lost their lives in Porto Rico is reported as 114.

The earthquake occurred shortly after ten o'clock in the morning at an hour when schools were in session. Two of the Aguadilla public school groups were installed on the third floor of the Municipal Hall. When the building collapsed, one of the teachers fainted and six children in here room were killed. In the adjoining room the teacher Miss Agripina Vargas, maintained her presence of mind and thus was able to direct the men who came to rescue to the particular places where pupils were buried. It so happened that Supervisor of Schools, Mr. Santiago Veve Jr., and Special Agricultural Teacher, Fernando Milan, were entering the building for the purpose of soliciting the teachers for Liberty Loan subscriptions. When the earthquake occurred and the building collapsed, Miss Vargas immediately called for help and through her efforts and those of the two gentlemen mentioned twenty-seven children who were buried beneath the debris were rescued and are alive today.

In the Marina School building in Aguadilla there some six hundred children at the time the quake occurred. This is a rented building and the school rooms are located on the second floor. Although the building did not collapse entirely, it was badly cracked and part of it caved in. Necessarily, there was a panic moment amongst the children, but the Acting Principal, Mr. Antonio Montalvo, fully proved his title as a hero. After the exit to the street had been cut off, he called the children to the front balcony overlooking the street and the nearby bay and then called the sailors and other workmen on the waterfront to the building, asking them to catch the children as he put them over the balcony to be caught by the men below. Not a child in this building lost its life.

In Mayaguez seven persons lost their lives when the graded school No. 2. At the playa collapsed, including Miss Emilia Irizarry, one of the teachers, a janitress, and five children. In the village of Rosario, municipality of San German, one little girl lost her life. While attempting to run to the street for safety she was struck by falling debris.

Skip to page 120 (127)

Letter from A. Galanes, Mayor of Mayaguez to Lt. Col. George B. Walbridge (Governor of Porto Rico) October 17, 1918

...lost her Hospital and has almost lost all of her other buildings....The aqueduct practically does not exist..We do not have now a city hall, neither a hospital, nor a poor asylum, nor a Municipal Theatre...construction of new slaughter house.. repairing of the building "old jail"...repairing iron bridge "Aguila"... repair firemens building downtown...

DATA ONLINE-

Numerous website have photos of the era in question online. A search of the internet located two principal sources with relatively unique photos, the University of Puerto Rico online collection and Photos-Puertorico.com. All photos around 1918 for the western cities were identified and copied. Also photos for Aguadilla were identified on www.flickr.com and copied. Several photos in these collections are not of earthquake damage, but might be used in any before-after investigation.

Table 6. Images of photos from UPR-Online photo collection

Numbers below are page numbers in UPR_POSTCARDS.pdf. Images labeled a and b are front and back of the same postcard.

| No. | Description |
|------------|---|
| 1 | Aguadilla_ojo_de_agua_moscioni_1898-1917.jpeg |
| 2 | Aguadilla_a_Mayagüez_global.jpeg |
| 3 | Aguadilla_borinquen_country_club_a.jpeg |
| 4 | Aguadilla_borinquen_country_club_b.jpeg |
| 5 | Aguadilla_columbus_a.jpeg |
| 6 | Aguadilla_columbus_b.jpeg |
| 7 | Aguadilla_cruz_de_colon_moscioni_1898-1917.jpeg |
| 8 | Aguadilla_fountain_a.jpeg |
| 9 | Aguadilla_fountain_b.jpeg |
| 10 | Aguadilla_global.jpeg |
| 11 | Aguadilla_lighthouse_2_a.jpeg |
| 12 | Aguadilla_lighthouse_2_b.jpeg |
| 13 | Aguadilla_lighthouse_a.jpeg |
| 14 | Aguadilla_lighthouse_b.jpeg |
| 15 | Aguadilla_monument_2_a.jpeg |
| 16 | Aguadilla_monument_2_b.jpeg |
| 17 | Aguadilla_monument_a.jpeg |
| 18 | Aguadilla_monument_b.jpeg |
| 19 | Aguadilla_old_a.jpeg |
| 20 | Aguadilla_old_b.jpeg |
| 21 | Aguadilla_panorama_1898-1917_moscioni.jpeg |
| 22 | Aguadilla_panorama_2_a.jpeg |
| 23 | Aguadilla_panorama_2_b.jpeg |
| 24 | Aguadilla_panorama_a.jpeg |
| 25 | Aguadilla_panorama_b.jpeg |
| 26 | Aguadilla_playa_a.jpeg |
| 27 | Aguadilla_playa_b.jpeg |
| 28 | Aguadilla_plaza_2_a.jpeg |
| 29 | Aguadilla_plaza_2_b.jpeg |
| 30 | Aguadilla_plaza_3_a.jpeg |
| 31 | Aguadilla_plaza_3_b.jpeg |
| 32 | Aguadilla_plaza_a.jpeg |
| 33 | Aguadilla_plaza_b.jpeg |
| 34 | Aguadilla_post_office_a.jpeg |

35 Aguadilla_post_office_b.jpeg
36 Aguadilla_prest_church_a.jpeg
37 Aguadilla_prest_church_b.jpeg
38 Aguadilla_spring_2_a.jpeg
39 Aguadilla_spring_2_b.jpeg
40 Aguadilla_spring_3_a.jpeg
41 Aguadilla_spring_3_b.jpeg
42 Aguadilla_spring_a.jpeg
43 Aguadilla_spring_b.jpeg
44 Aguadilla_street_a.jpeg
45 Aguadilla_street_b.jpeg
46 Aguadilla_town_a.jpeg
47 Aguadilla_town_b.jpeg
48 Aguadilla_vista_a.jpeg
49 Aguadilla_vista_b.jpeg
50 Añasco_a.jpeg
51 Añasco_b.jpeg
52 Añasco_market_a.jpeg
53 Añasco_market_b.jpeg
54 nothing
55 nothing
56 Mayagüez_aduana_a.jpeg
57 Mayagüez_aduana_b.jpeg
58 Mayagüez_balboa_bridge_moscioni_1898-1917.jpeg
59 Mayagüez_banco_colonial_cifuentes_a.jpeg
60 Mayagüez_banco_colonial_cifuentes_b.jpeg
61 Mayagüez_blanes_cifuentes_a.jpeg
62 Mayagüez_blanes_cifuentes_b.jpeg
63 Mayagüez_caam_a.jpeg
64 Mayagüez_caam_b.jpeg
65 Mayagüez_calle_comercio_a.jpeg
66 Mayagüez_calle_comercio_b.jpeg
67 Mayagüez_cancio_ortiz_cifuentes_a.jpeg
68 Mayagüez_cancio_ortiz_cifuentes_b.jpeg
69 Mayagüez_casino_cifuentes_a.jpeg
70 Mayagüez_casino_cifuentes_b.jpeg
71 Mayagüez_catedral_moscioni_1898-1917.jpeg
72 Mayagüez_cathedral_a.jpeg
73 Mayagüez_cathedral_b.jpeg
74 Mayagüez_colegio_cifuentes_a.jpeg
75 Mayagüez_colegio_cifuentes_b.jpeg
76 Mayagüez_columbus_a.jpeg
77 Mayagüez_columbus_b.jpeg
78 Mayagüez_correction_school_a.jpeg
79 Mayagüez_correction_school_b.jpeg
80 Mayagüez_diablos_1_cifuentes_a.jpeg

81 Mayagüez_diablos_1_cifuentes_b.jpeg
82 Mayagüez_diablos_2_cifuentes_a.jpeg
83 Mayagüez_diablos_2_cifuentes_b.jpeg
84 Mayagüez_escuela_sisters_cifuentes_a.jpeg
85 Mayagüez_escuela_sisters_cifuentes_b.jpeg
86 Mayagüez_general_a.jpeg
87 Mayagüez_general_b.jpeg
88 Mayagüez_gonzales_cifuentes_2_a.jpeg
89 Mayagüez_gonzales_cifuentes_2_b.jpeg
90 Mayagüez_gonzales_cifuentes_a.jpeg
91 Mayagüez_gonzales_cifuentes_b.jpeg
92 Mayagüez_guanijibo_1.jpeg
93 Mayagüez_guanijibo_2.jpeg
94 Mayagüez_guanijibo_3.jpeg
95 Mayagüez_hyman's_tourist_shop_a.jpeg
96 Mayagüez_hyman's_tourist_shop_b.jpeg
97 Mayagüez_iglesia_cifuentes_2_a.jpeg
98 Mayagüez_iglesia_cifuentes_2_b.jpeg
99 Mayagüez_iglesia_cifuentes_a.jpeg
100 Mayagüez_iglesia_cifuentes_b.jpeg
101 Mayagüez_mallor_cifuentes_a.jpeg
102 Mayagüez_mallor_cifuentes_b.jpeg
103 Mayagüez_mango_a.jpeg
104 Mayagüez_mango_b.jpeg
105 Mayagüez_mendez_vigo_1910_a.jpeg
106 Mayagüez_mendez_vigo_1910_b.jpeg
107 Mayagüez_mendez_vigo_a.jpeg
108 Mayagüez_mendez_vigo_b.jpeg
109 Mayagüez_mercado_a.jpeg
110 Mayagüez_mercado_b.jpeg
111 Mayagüez_panorama_moscioni_1898-1917.jpeg
112 Mayagüez_pena_2_a.jpeg
113 Mayagüez_pena_2_b.jpeg
114 Mayagüez_pena_a.jpeg
115 Mayagüez_pena_b.jpeg
116 Mayagüez_pena_cortada_moscioni_1898-1917.jpeg
117 Mayagüez_playa_moscioni_1898_-_1917.jpeg
118 Mayagüez_playas_a.jpeg
119 Mayagüez_playas_b.jpeg
120 Mayagüez_plaza_2_a.jpeg
121 Mayagüez_plaza_2_b.jpeg
122 Mayagüez_plaza_3_a.jpeg
123 Mayagüez_plaza_3_b.jpeg
124 Mayagüez_plaza_4_a.jpeg
125 Mayagüez_plaza_4_b.jpeg
126 Mayagüez_plaza_5_a.jpeg

| | |
|-----|---|
| 127 | Mayagüez_plaza_5_b.jpeg |
| 128 | Mayagüez_plaza_6_a.jpeg |
| 129 | Mayagüez_plaza_6_b.jpeg |
| 130 | Mayagüez_plaza_7_a.jpeg |
| 131 | Mayagüez_plaza_7_b.jpeg |
| 132 | Mayagüez_plaza_a.jpeg |
| 133 | Mayagüez_plaza_b.jpeg |
| 134 | Mayagüez_prest_church_a.jpeg |
| 135 | Mayagüez_prest_church_b.jpeg |
| 136 | Mayagüez_prest_cifuentes_a.jpeg |
| 137 | Mayagüez_prest_cifuentes_b.jpeg |
| 138 | Mayagüez_puente_a.jpeg |
| 139 | Mayagüez_puente_b.jpeg |
| 140 | Mayagüez_puente_barcelona_cifuentes_a.jpeg |
| 141 | Mayagüez_puente_barcelona_cifuentes_b.jpeg |
| 142 | Mayagüez_redentorists_a.jpeg |
| 143 | Mayagüez_redentorists_b.jpeg |
| 144 | Mayagüez_residencia_cifuentes_a.jpeg |
| 145 | Mayagüez_residencia_cifuentes_b.jpeg |
| 146 | Mayagüez_square_a.jpeg |
| 147 | Mayagüez_square_b.jpeg |
| 148 | Mayagüez_street_car_a.jpeg |
| 149 | Mayagüez_street_car_b.jpeg |
| 150 | Mayagüez_sugar_a.jpeg |
| 151 | Mayagüez_sugar_b.jpeg |
| 152 | Mayagüez_the_plaza_a.jpeg |
| 153 | Mayagüez_the_plaza_b.jpeg |
| 154 | Mayagüez_torrellas_y_fuentes_cifuentes_a.jpeg |
| 155 | Mayagüez_torrellas_y_fuentes_cifuentes_b.jpeg |
| 156 | Mayagüez_tranporte_a.jpeg |
| 157 | Mayagüez_tranporte_b.jpeg |
| 158 | Mayagüez_yaguez_a.jpeg |
| 159 | Mayagüez_yaguez_b.jpeg |
| 160 | san_german_porta_coeli_a.jpeg |
| 161 | san_german_porta_coeli_b.jpeg |
| 162 | vieques_lighthouse.jpeg |

Table 7. Images from Puertorico.com

All photos are of Mayagüez

| Number | File Name |
|---------------|------------------------------------|
| 1 | 3774748494_a4ba75bf3e.jpg |
| 2 | Antigua carcel-msm3.jpg |
| 3 | Antiguo hospital militar-msm19.jpg |

| | |
|----|--------------------------------------|
| 4 | Antiguo mercado-msm5.jpg |
| 5 | Antiguo teatro de Mayagüez-msm31.jpg |
| 6 | Asilo de ancianos-msm7.jpg |
| 7 | Barracas de infanteria-msm9.jpg |
| 8 | Customs house-msm1.jpg |
| 9 | Escuela-roosvelt-msm4.jpg |
| 10 | gGuenar bridge-msm29.jpg |
| 11 | Iglesia_Mayagüez_1918.jpg |
| 12 | Plaza Mayagüez -alcaldia-msm2.jpg |
| 13 | Terremoto-pop1.jpg |
| 14 | Terremoto-pop10.jpg |
| 15 | Terremoto-pop11.jpg |
| 16 | Terremoto-pop12.jpg |
| 17 | Terremoto-pop13.jpg |
| 18 | Terremoto-pop14.jpg |
| 19 | Terremoto-pop2.jpg |
| 20 | Terremoto-pop3.jpg |
| 21 | Terremoto-pop4.jpg |
| 22 | Terremoto-pop5.jpg |
| 23 | Terremoto-pop6.jpg |
| 24 | Terremoto-pop7.jpg |
| 25 | Terremoto-pop8.jpg |
| 26 | Terremoto-pop9.jpg |
| 27 | Terremoto_Mayagüez_1918.jpg |

Table 8. Photos from Flickr.com

<http://www.flickr.com/photos/jibaro42/sets/72157607135490566/>

“Photos from Angel Acevedo

Aquí les presento una colección de fotos de mi pueblo, Aguadilla. Colecciono fotos de mi pueblo desde hace 20 años y las tengo en propiedad. Visítalas con frecuencia porque estaré añadiendo algunas de vez en cuando. La mayoría de las fotos después de las antiguas son tomadas por mí, excepto algunas que me ceden mis amigos. A estas le doy su debido crédito. Espero que las disfrutes y hagas tus comentarios.

Ángel

Las fotos pueden ser ampliadas utilizando la lupa que aparece arriba de cada una.

Si encuentras algún error en este álbum, por favor haz el comentario en la casilla de abajo de cada foto

Todos los comentarios son bienvenidos.

Gracias

Notes for Fuego_1914

El Fuego Maisonave de 1914

La foto de arriba fue tomada después del fuego de 1914 en la calle de La Fuente, ahora Muñoz Rivera. A este fuego se le conoce como "El Fuego Maisonave."

Junto a la farmacia del Lcdo. Maisonave, sita en la calle de la Fuente, en 1914 se desarrolló un incendio de tal magnitud, que se propagó hasta cerca de la plaza de recreo y las calles de la Marina, Gonzalo Firpo, Duda y Catalanes, quedando reducidas a escombros 27 casas.

En la misma calle, para la época de la Segunda Guerra Mundial, en moderno edificio construido años después del mencionado incendio, tuvieron la farmacia, don José J. y don Luis Zamora Rovira, la que luego adquirió su sobrino don Arturo Reichard Zamora, regentándola la Lcda. Suárez. Luego fue propiedad de Ramón Egipciaco y actualmente -2008- de la sucesión Jaime Bello.

Como dato curioso, a mano derecha y en le foto inferior, aparece la tienda El Fuego de Raúl Feliciano, cerrada en estos momentos -2008.

Parte de estos datos fueron obtenidos del libro 'De historia y literatura Puertorriqueñas' de Heman Reichard Esteves y de la historiadora aguadillana Haydee Elena Reichard, PhD.

Notes for CII_Victoria:

Esta postal es de una pintura donde vemos el edificio donde estaba el Café Puerto Arturo de la familia Alvarado. Esta era la calle Victoria que luego se convirtió en calle Mercedes Moreno.

A la izquierda aparecen unos edificios donde estaba ubicado el correo en los años 1800.

Note que la actual calle José de Diego no existe. El primer nombre de esta calle era Santa Bárbara”

DVDs with more than 13Gb of data, containing all the images obtained from the main archive, the photographic archive and the National Library, are included with this report and are also available from the authors upon request.

Table 9. Content of Data DVD's

DVD-1

Fondo Obras Publicas\OP AV Caja 159
Fondo Obras Publicas\OP AV Caja 160
Fondo Obras Publicas\OP AV Caja 161
Fondo Obras Publicas\OP AV Caja 162
Fondo Obras Publicas\OP AV Caja 163

DVD-2

Images\Photographic Archive\Belen Rodriguez Bosch de Diaz Collection
Images\Photographic Archive\Gieling Collection
Images\Photographic Archive\REPRODUCTION RESTRICTIONS- PHOTOGRAPHIC ARCHIVE.PDF

DVD-3

Fondo Obras Publicas\OP AV Caja 164
Online\Acevedo_photos
Online\Puertorico.com Collection
Online\University of Puerto Rico Collection
Maps\Plano 356 Mayaguez
Maps\Plano 85 Aguadilla
National Library\Informe del Comisionado del Interior
National Library\Puerto Rico Ilustrado
National Library\Report by the Construction Division of The Army 1918
geocodes\aguadilla
geocodes\anasco
geocodes\mayaguez
Spreadsheets\Aguadilla_damage_reports_24Jun2011.xls
Spreadsheets\Aguadilla_Petition_summary.xls
Spreadsheets\anasco_damage_reports_SD_14March2011.xls
Spreadsheets\geocode_aguadilla_anasco.xls
Spreadsheets\NEHRP-all Mayaguez data.xlsx

DVD-4

Fondo Obras Publicas\OP AV Caja 165

EXTRACTION OF PETITION DATA

Key pieces of information were extracted from the available petitions for the cities of Aguadilla, Añasco, and Mayagüez.

Petitions used by the special earthquake commission to determine extent of damages and need for repairs to personal structures contain 4 pages of information, with 11 questions and numerous declarations as to veracity, including a signature by the Mayor. We extracted pertinent solicitor information and the all important question #5.:

1- Solicitor information: Names, Age, Civil status, Occupation, Barrio, County, House dimensions, Type of construction, Bordered on front by what street, Names of Neighbors to Left, Right, and Back of Property, # of House, Lot Size, Name of Owner:

2/3/4- Where the house is registered; estimated value and debts on the house before the earthquake;

5-“ As a result of the earthquakes felt on this island at the end of last year, the above mentioned has suffered the following damage” (document says make a complete description).

Each form was signed by an architect and the mayor of the municipality in which the damage occurred. Many forms were filled out by hand making capture of the information rather tedious. Some forms were type-written. An inspector was sent to verify the claim of the petitioner, determine the nature of the repairs, and estimate cost. In general inspector reports, general correspondence associated with the petition and the petition itself are found together, facilitating examination of each petition on a case-by-case basis.

Law #8 which formed the commission in 1918, and allocated the funds for repairs, also set out restrictions for use of the funds. A petitioner had to be the owner of the house, and it was to be his principal residence, and any part used for business would not receive aid from the government. In some cases repairs done before the inspection might be reimbursed if verifiable. In most cases the house had to have been previously registered with the local municipality to demonstrate ownership and existence of the house prior to the earthquake and tsunami. Some claims were rejected because the petitioner did not meet the requisite conditions. This, however, does not mean that the damage noted by the petitioner necessarily did not happen. In fact, in some cases, the inspector did verify the damage, but the petition was later rejected by some other part of the bureaucracy. In some cases the petitioner was not honest about the earthquake/tsunami effects.

In most cases the claim of damage caused by the earthquake or tsunami was verified by the inspector, at least to some degree. Inspector reports, while brief, were detailed as to the nature of the damage, and what material and labor were needed to complete the repairs. If a house was missing, being taken out to sea by the tsunami, a new one was provided at a cost of 1918 \$US 250.00. Inspectors and petitioners alike many times noted the general condition of the house, in particular if significant parts were rotten or very old, making it more susceptible to earthquake shaking.

Table 10. Description of Petition Compilation Spreadsheets

Spreadsheet Columns

A. Legajo

- B. Caja (Box)
- C. Folder
- D. Image File Name
- E. Puerto Rico Petition Number (if any)
- F. Client Name
- G. Barrio (Neighborhood)
- H. Street
- I. Municipio (Municipality)
- J. Width
- K. Depth
- L. Type of Construction
- M. # of stories
- N. Condition
- O. Front
- P. Right
- Q. Left
- R. Back
- S. House number
- T. Original comment (#5)
- U. Inspector Comment
- V. Petition valid/work done?
- W. Tsunami/earthquake
- X. Comment
- Y. Cost
- Z. Location Quality
- AA. Lat Using Zip Code 00682
- BB. Lon Using Zip Code 00682
- CC. Source of geocode using 00682
- DD. Lat using Zip Code 00680
- EE. Lon using Zip Code 00680
- FF. Source of geocode Zip Code 00680

Descriptions-

Legajo, Caja, and Folder- These refer to the location of the documents in the San Juan General Archive. All of these documents are found in the “Fondo Obras Publicas”, Public works part of the archive unless otherwise noted. So for example one document might be found as follows in the archive: Fondo:Obras Publicas, Legajo 211, Caja 211, Folder 1.

Image Name- All images in a given Folder or Caja were captured using a digital camera, except for Caja 159, Legajo 205 which was only partially captured. Images were formed into a PDF

document. The image name is its page number in the PDF book and is also indicated in the original jpg file name in parentheses.

Columns E-T (except N) contain information extracted from the Petition for aid developed and circulated by the Special 1918 Earthquake Commission.

Puerto Rico Petition Number (if any) Most petitions contain a number in the upper right hand corner of the first page. Numbers for different towns might be the same, That is, the sequence of numbers for all towns all start with “001”, so one must be careful not to mix petitions from different towns together. If a petition does not have a petition number it portably has “no inscrita” (unregistered) written on top.

Client Name- Name of the client soliciting aid.

Barrio- (Neighborhood) Barrio where the house is located, if any

Street- Street on which the house is located, if any or known

Municipio (Municipality-) Town where the house is located (Aguadilla, Aguada, Mayaguez).

*Width-*Client supplied width of house could be in feet and inches, meters or varas. Inspector measurements are more reliable. Many structures are complex, being composed of detached pieces, so this should only be used as a rough guide to the house size.

*Depth-*Client supplied Depth of house

*Type of Construction-*Client supplied type of construction

*# of stories-*Client supplied number of stories

*Condition-*Column to indicate condition of structure

*Front-*Client supplied name of what is in front of house, usually a street, sometimes the sea or river.

Right- Client supplied name of what is on the right of the house, usually name of owner of adjacent house, or property owner

Left - Client supplied name of what is on the left of the house, usually name of owner of adjacent house, or property owner

Back- Client supplied name of what is behind the house, usually name of owner of adjacent house, or property owner

*House number-*Address of the House (if known or if any)

*Original comment (#5)-*Commentary written by the client describing what happened to the house as a result of the earthquake and tsunami on October 18, 1918. Many times they are hard to read if

handwritten; sometimes not accurate. Other times extremely useful, providing vivid eyewitness accounts of that happened that day.

Inspector Comment- Inspectors were sent by the commission to verify the nature of the damage and make an estimate of the type of repair work to be done including cost. They also determined if the petitioner was eligible for the relief offered by the government. Their comments are probably the most reliable of the whole petition process.

Petition valid/work done? In some cases the damage claimed by the petitioner was found to be different than that by the inspector, or no damage occur. In other cases events or situations were found which invalidated the petition. These would include situations such as, house sold, owner rented the house, owner requested relief on multiple properties. In some cases the petition was declared invalid, that is relief would not be provided, but earthquake/tsunami damage in fact occurred.

Tsunami/earthquake- Damage was caused by tsunami, earthquake or a combination of the two. If blank no damage occurred or source of damage uncertain.

*Comment-*Our comment of this petition

*Cost-*Inspectors estimate of cost of repairs in 1918 US\$. If no damage value is \$0.00. If house was a total loss (washed out to sea) or irreparable a value of \$250.00 is assigned. This is cost of one of the new houses proved by the commission.

Location Quality-(E-exact, S-street, B-Barrio, M-Municipality) To what degree the petition/inspector provided information to determine the location of the house. A geocoded house location could only be as precise as the information provided. Possibilities are exact address, just the street, Barrio, or Municipality. This is not quality of geocoded address given in other columns as street names or address numbering may have changed or street no longer exists. In many cases regardless of the completeness of the address, geocoding failed.

*Lat Using Zip Code 00682-*Geocoded latitude using zip code 00682. Mayaguez is contained in two zip codes. To maximize correct geocoding, both zip codes were tried in the geocoding process. Geocoding was done by Geocoder.US.

Lon Using Zip Code 00682- Geocoded longitude using zip code 00682

Source of geocode using 00682- google or zip

Lat using Zip Code 00680- Geocoded latitude using zip code 00680

Lon using Zip Code 00680- Geocoded longitude using zip code 00680

Source of geocode Zip Code 00680- google or zip

Spreadsheets with the extracted information for Mayaguez, Aguadilla, and Añasco are included in the DVD.

GEOCODING 1918 ADDRESSES TO DETERMINE GEOGRAPHIC LOCATIONS

The petitioner and inspectors provided the following information useful for an automated geocoding of the location of the petitioner's house; municipality, barrio (neighborhood, street and house number. In many cases not all this information was provided, in particular house numbers were not given or the petitioner and the inspector give different house numbers. In some cases the street name was not given as there was none, names differed between petitioner and inspector, or the property was obviously on someone property, not a typical house on a street. In some cases house fronted on the sea or the river. A final problem for geocoding was street name changes between 1918 and today and possible renumbering of homes.

Results for Aguadilla

This section summarizes the results of the analysis of damage petitions for Aguadilla, and discusses implications for tsunami runup.

Damage Reports for Aguadilla

A final report to the Earthquake Board is contained in the archival material, starting at Caja 161, Legajo 208, image 410, and dated January 27, 1921. Table 6 lists the results, and the results of the archive search. Out of a total of 275 petitions submitted, 92 resulted in denials, and 183 were granted. Of those granted, 147 were given new houses and 36 were given funds for repair. Of the "new houses", 111 were given new houses in the new Barrio Obrero district, established on the south outskirts of the town, and the remaining 36 given \$250 toward reconstruction on their existing sites.

Of the 275 received petitions, only 88, or 32%, were found in the National Archives. Thus 187 are stored elsewhere or lost. 118, or 80% of the "new house" petitions were not found, while only 12, or 33% of the repaired houses were not found in the archive. This suggests that petitions involving repairs were preferentially saved. From archive records, 37 petitions are known to have come from areas outside the town of Aguadilla, mostly along the east-west trending coastline to the north.

Damage reports, Inspector reports, and supporting letters were read, transcribed and tabulated in spreadsheet *Aguadilla_damage_reports_24Jun2011.xls*. Included is all relevant information from the damage reports- transcriptions of the damage description by owner and inspector, descriptions of the property, neighboring properties, and final disposition of the claim. The transcription quality varies widely, as the orthography ranges from excellent (typewritten) to impossible (illegible handwriting). A summary of Aguadilla petitions are summarized in spreadsheet *Aguadilla_Petition_summary.xls*.

Of the 88 petitions, only 29 contained street numbers. All others were identified by street and barrio (neighborhood). These barrios exist today, but their boundaries are not known, and it also not known if the present day boundaries are the same as they were in 1918. From the old town map (Figure 2; AGPR mapoteca/Plano 85), made sometime prior to 1918, street locations for the most part haven't changed, but some names have changed. Figure 2 proved very useful in identifying

streets whose names have changed since 1918. Two streets, Peru and Salsipuedes, are specified in damage reports, but are not found on the old nor present day maps.

Table11 – Damage Report Summary for Agudilla

| Source | Total # of Petitions | # "New House" | # Repaired | # Missing |
|--------------------------|----------------------|---------------|------------|-----------|
| Earthquake Board Records | 275 | 147 | 36 | |
| Archive Search | 88 | 29 | 24 | 187 |

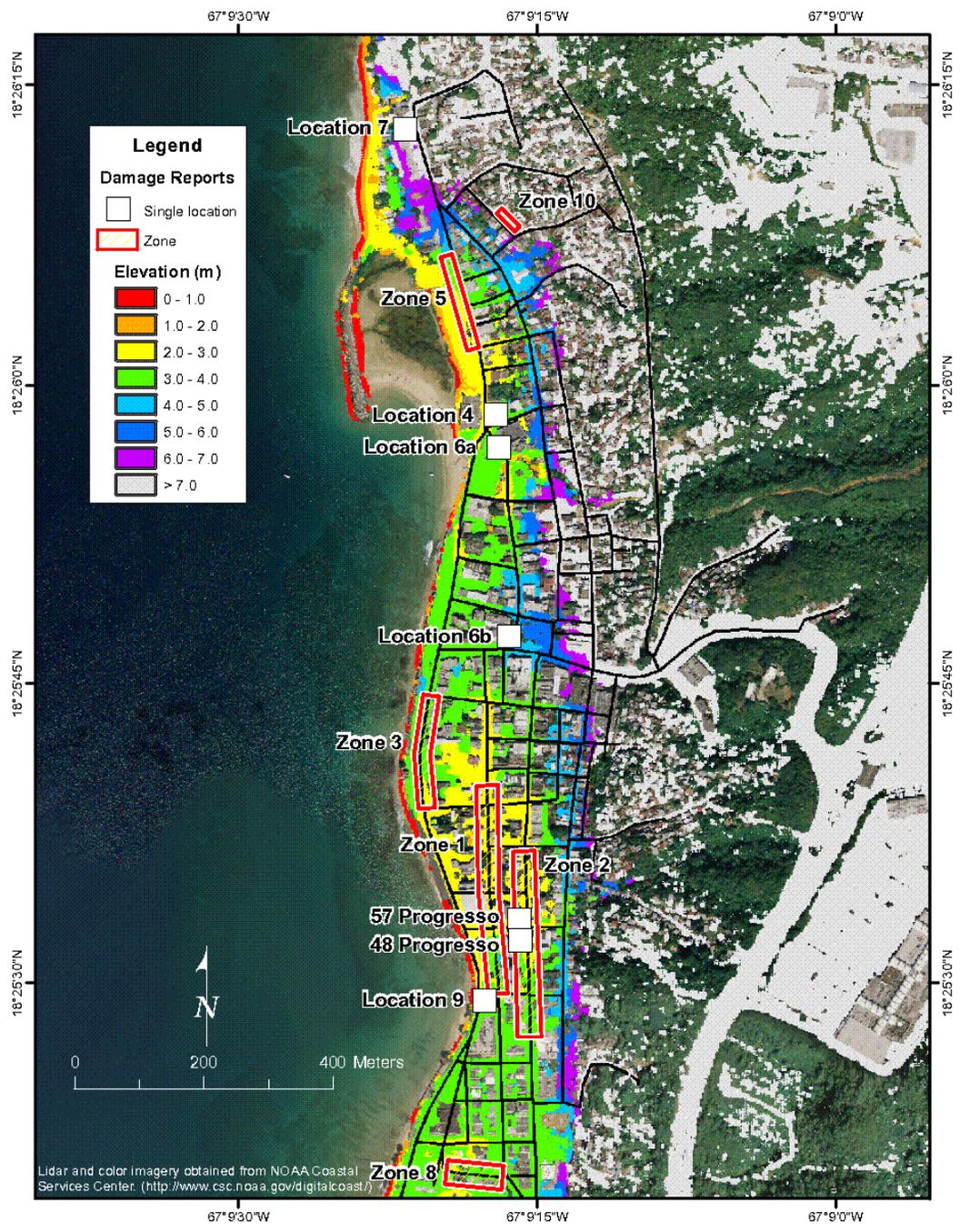


Figure 3

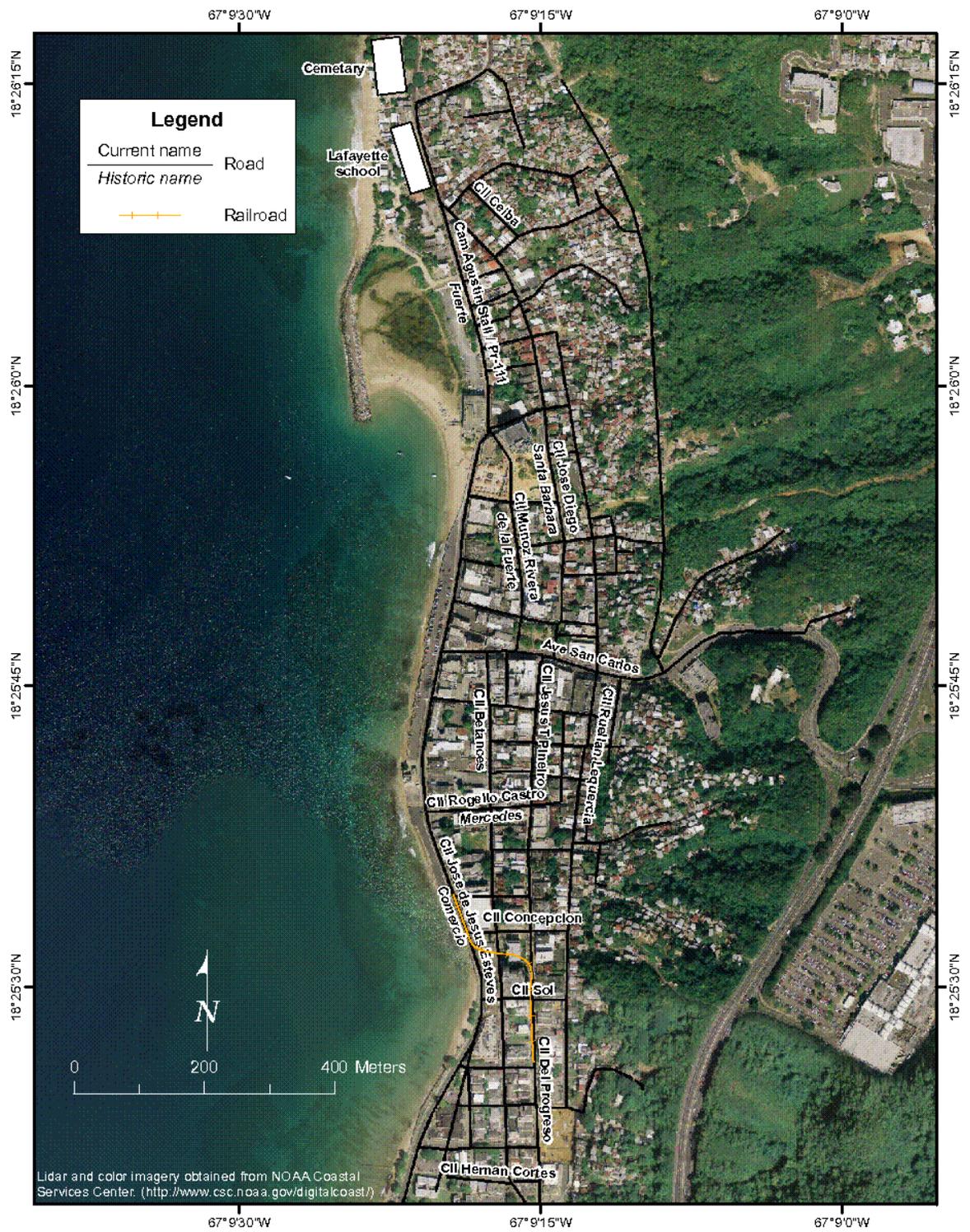


Figure 4

Synthesis of Damage Reports

An attempt to reference the 29 addresses to modern locations using a geocoding service was largely unsuccessful. Problems included lack of exact address locations in the geocode database, and changed street names. Also it is not known whether the addresses of 1918 correspond to modern ones. As an example, precise locations for 48 and 57 Progreso in 1918 imply addresses increased from south to north, while modern addresses increase from north to south. Further research might clarify this issue.

The reports for Aguadilla were grouped by either a zone, where one or more reports can be located with some degree of confidence, or specific locations where one or more reports can be precisely located. There are ten such zones and locations, shown in Figure 3. The damage scale used to assign a damage value is listed in Table 7. Below are descriptions and discussions for each zone or location, assigned damage level, and a summary of damage levels in Table 8. In the descriptions below a street number is suffixed with a :, and a petition number prefixed by #. The zones and locations are shown in Figure 3. Figure 4 shows the same area, with relevant streets labeled. Where street names changed the old name is shown in italics.

Table 12 – Damage Scale used for Aguadilla

| Number | Damage |
|--------|--|
| 1 | House carried away by tsunami |
| 2 | House moved by tsunami, not repairable |
| 3 | House destroyed by tsunami, not repairable |
| 4 | House moved by tsunami, repairable |
| 5 | Tsunami damage, repairable |
| 6 | House destroyed by ground shaking |
| 7 | House severely damaged by ground shaking, repairable |
| 8 | House moderately damaged by ground shaking, repairable |
| 9 | House lightly damaged by ground shaking, repairable |
| 10 | Tsunami and ground shaking damage |
| 11 | No damage |

Zone/Location Synthesis

Zone 1:

Calle Betances - 10 petitions

4 have addresses, ranging from 42 to 122 .

42: #318: much damage but repairable, no mention of wave (Damage 7)
62: #207: house moved by wave into Calle Progreso (50m), not repairable (Damage 3)
73: #291: moderate damage (\$43), no mention of wave (damage 9)
76: #263: house moved into street (presumably Betances) \$150 repair (Damage 4)
122: #215: house moved 128' (43m) by wave, repaired for \$120 (Damage 4), house probably near Calle Sol (south end of Betances), as "maritime zone at left and rear"

Calle Betances with no addresses:

#213: probably south end, "maritime zone at rear", house moved 75' (25m), repairable \$150 (damage 4)
#204: railroad to right of house, locating it in 2 possible locations on the old map, depending on whether the house faced east or west, between Calle Mercedes and Calle Sol. house moved 58m by wave, repairable \$124 (damage 4).
#214: probably south end, "maritime zone at rear", house totally destroyed (smaller house than those that got moved by wave) (Damage 3)
#198: probably south end, "maritime zone at rear", house totally destroyed (smaller house than those that got moved by wave) (Damage 3). Address of this house is either 74 or 78, since Eduardo Valle is to right of 76 Betances (#263) and to left of this house. This house is 4 x 6m, while #263 is 10 x 6m.

Comments: Addresses greater than 42 have the maritime zone to the rear. By the old map this would place them between Calle Mercedes and Calle Sol, i.e. between Calle Concepcion and Calle Sol on the modern map. The larger houses got moved and damaged, the smaller houses got carried away or completely destroyed. #318, address 42, apparently suffered no wave damage, so was perhaps located to the north.

Zone 2:

Calle Progreso - 7 petitions

6 have addresses, ranging from 48 to 134.

48: # 201: "railroad to left" places this house precisely on the old map. Large house. owner claimed \$200 damage, including water damage. Petition denied because damage was "painted", inspector could not ascertain original damage (Damage 10).

54: #222: Large, older house. Repair \$98, some structural and water damage (Damage 10 or 8). Water entered back of house.

56: #209: house moved 6' (2m). Petition denied because damage was "painted", inspector could not ascertain original damage (Damage 9). Inspector says wave came to within 6' of site.

57: #216: Large, older house. Repairable, \$180. Water carried away clothing and furniture. "Calle Concepcion to right" locates house precisely on old map.

61: #336: Large house. No damage, invalid claim (Damage 11).

134: #1a: Moderate sized house. Repairable, \$248. No mention of water damage (Damage 7).

Zone 3

Calle del Comercio – 17 petitions

9 with addresses

34 or 134: #208: House destroyed, materials salvaged (Damage 3).
37: #313: Larger house, Repairable, \$213. No mention of water damage (Damage 8).
66: #197: Larger house, repairable \$250. water and shaking damage (Damage 10). Texas Co. to right.
75: #2a: Yglesia barrio. repairable, \$100. Wave damage (Damage 5).
80: 325.12: Repairable \$200 (Damage 5).
87: #220: Escuela Agustin Stahl to left, larger older house, another house pushed by wave collided with it, repair \$186 (Damage 5).
93: #218: Escuela Agustin Stahl to right, larger older house, house moved 60' (20m) by wave, repair \$216 (Damage 4).
105: #225: Largely structural damage, water carried away fence around patio, 2m max height? repair \$45 (Damage 10).
109: #202: wave moved house 25' (8m), house destroyed (Damage 2).

Damage assignments for the petitions without addresses are shown in Table 9.

Location 4

Calle Stahl (Fuerte on old map)

6: #210: Barrio Tamarindo, 2-story house, mamposteria lower, wood upper. Rendered uninhabitable. No mention of wave. Calle del Fosforo on right. (Damage 10)

Zone 5

Calle Stahl

58: #212: Barrio Tamarindo, larger wood house w/ concrete floor, kitchen and dining room at rear destroyed by wave, rendered uninhabitable, but repairable (Damage 6). Note that the beach and jetty west of this location were built after 1918.

Location 6

3 Calle de la Fuente (now Calle Munoz Rivera)

325.12: Large mamposteria, 14 x 24m, damage/destruction of walls, estimated repair \$600. No mention of water damage. Barrio Iglesia. (Damage 7).

Location 7

3 Playa: #311

Between Cemetery and Escuela Lafayette. House taken away by wave (Damage 1)

Zone 8

Calle Hernan Cortes

#306: major structural damage, no mention of wave damage, repairable \$119. (Damage 8)

Location 9

Calle del Sol

#310: Beach on left. (Damage 1).

#335: Maritime zone left and back. (Damage 1).

Zone 10

Calle de Ceiba

#327: House destroyed, no wave mentioned. (Damage 6)

Zone 11

Calle de las Mercedes

10: #333: No damage- bogus petition. Small wood house. (Damage 11).

Damage suggests east end of street, not west on beach. However, on modern street Calle Rogelia Castro, numbers increase from west to east.

Streets not identified:

#314: Calle Peru (Barrio Tamarindo) bogus petition

#329: Calle Salsipuedes (Barrio Iglesia) house repairable, shaking damage

Table 13 – Aguadilla Damage Location Summary

| Zone | Location | Area | Damage |
|------|----------|-----------------------|----------------|
| 1 | | Calle Betances | 1, 3, 4 |
| 2 | | Calle Progreso | 9, 10, 11 |
| 3 | | Calle Comercio | 3, 4, 5, 8, 10 |
| | 4 | Stahl & Fosforo | 6 |
| 5 | | Calle Stahl | 10 |
| | 6 | Calle de la Fuente | 7 |
| | 7 | Playa, Esc. Lafayette | 1 |
| 8 | | Calle Hernan Cortes | 8 |
| | 9 | Calle del Sol, playa | 1 |
| 10 | | Calle de Ceiba | 6 |
| 11 | | Calle las Mercedes | 11 |

Observations and Summary

The most striking observation is that the damage reports come from two main areas:

The first is the neighborhood to the south between Calle Concepcion and Calle Sol (north to south), and the shoreline and Calle Progreso (west to east). Along Calle Comercio, which runs along the shoreline, all petitions report complete destruction, often with the house completely carried away by the tsunami. This includes the Calle Sol reports (Location 9) which is on the beach.

The Calle Betances addresses, where two can be pinpointed by virtue of a cross street and railroad crossing (which are visible on the old map) being named in the petition, with one exception, lie in a roughly 200m line between Calle Mercedes (now Rogelio Castro) and Calle Sol. The zone (Zone 1) lies between a few and 70m of the shoreline (on the old map the south termination of the street ends at the beach). Damage to these houses ranged from complete disappearance to being pushed off their foundations as much as 50m, but in some cases retrievable and repairable. Address 42

suffered no wave damage, so if that address could be located, the tsunami inundation could be determined in this area.

Calle Progreso (Zone 2) lies about 50m east of Calle Betances. Reports tied to street corners and the railroad imply the addresses increase from south to north, and fall within a roughly 200m line between Calle Concepcion and Calle Central. Addresses 48 and 57 report some water damage, but not enough to cause major damage. These are precisely located. At address 61, presumably slightly to the north, the inspector reported no damage. Address 134, presumably quite a bit to the north (or south, if addresses increased from north to south), suffered repairable structural damage but no tsunami damage. Most of the houses on this street were larger, older houses.

The Calle Comercio reports comprise Zone 3. Although 9 addresses were gleaned from 17 damage reports, the locations of these addresses remains unknown. Damage reports, as described above and in Table 9, vary widely. Knowledge of these address locations would be valuable.

Table 14 – Calle Comercio, no address, Damage

| Petition # | Damage |
|------------|--------|
| 200 | 1 |
| 211 | 1 |
| 217 | 3 |
| 282 | 1 |
| 284 | 3 |
| 292 | 1 |
| 307 | 1 |
| 334 | 1 |

About 200m north of this area (Zone 11), at 10 Calle las Mercedes (now Calle Rogelio Castro) a false report was filed for a small wood house; the inspector found no damage. From the old map, that street ran from the shoreline 250m to the east, ending at present day Calle Ruella Lequerica. The low address number implies this location was at either the east or west end of the street. The east location is more likely, for if at the west end the house would have been impacted by the tsunami. However, modern addresses on this street (from a Google Maps search) appear to increase from west to east. The fact that this house suffered no damage is noteworthy.

The second main area is to the north, between the old Lafayette School (now Escuela Carmen Gomez Tejera) on the north, and the intersection of Calle Stahl and Fosforo to the south, a length of about 200m.

Location 4 is explicitly at the corner of Stahl and Fosforo. The 2-story mamposteria structure was rendered uninhabitable by ground shaking, but there is no mention of tsunami inundation. At Location 6 another large mamposteria structure was damaged, but judged repairable. Again, no tsunami damage was noted. If street numbers on Calle de la Fuente increased to the south, this implies a location very close to Location 4. Alternatively, this location could be at the south end of Calle de la Fuente. This is possible, since Location 4 is in Barrio Tamarindo while Location 6 is in

Barrio Iglesia, and to the south street numbers appear to increase from south to north. Thus on the map the northerly location is labeled 6a, and southerly 6b.

Zone 5 attempts to encompass the address 58 Stahl. This older, larger house was severely damaged, but deemed repairable for \$248. The kitchen and dining room at the rear (beach side) of the house “disappeared”, but apparently enough of the house was left to reconstruct it.

Location 7 is the beach area between the Lafayette School and the Cemetery. Houses here were completely destroyed and carried away by the tsunami.

Zone 10 attempts to encompass a report from Calle Ceiba, where a wood house was destroyed by ground shaking. The zone conforms to the “hill to the rear” of the house in the damage report, as observed in present-day topography.

The last report discussed lies about 100m south of Calle Sol, on Calle Hernan Cortes (Zone 8). Today this street is 50m long, in the same location as in 1918 (Barrio Obrero map). This larger, wooden house with kitchen on the back was severely damaged, but repairable. There is no mention of tsunami damage.

Implications for Tsunami Inundation

Although the damage reports for Aguadilla are far from complete (the Archive contained only 32% of the total) there are enough reports indicating the extent of tsunami damage that some conclusions can be drawn.

The first, and most obvious, is that all houses along the beach were severely impacted, in many cases with no trace of the structure remaining. Figure 5, from Puerto Rico Ilustrado issue #452 shows shoreline damage in the La Namera district, whose exact location is unknown, but from the shoreline in the background is probably near where modern Calle Rogelio Castro meets the sea. Evident from this photo is that some houses were knocked of their stilt foundations, but remained more or less intact and could be moved back to their original locations, as confirmed in some of the damage reports. Another observation is that palm groves and other vegetation along the shoreline may have been dense, and may have impeded tsunami movement inland. Figure 6, looking south from the south end of Calle Betances, also shows indications of trees and vegetation along the shoreline.

The second major observation is that, although limited in completeness, the reports of tsunami damage inland come from two zones: the area between Calle Stahl to the south and the Lafayette School- El Fuerte (the old Spanish fort) to the north, and the area along Calles Betances and Progreso to the south. The LiDar map (Figure 3) shows that these areas have elevations of less than 3 meters. There are no reports of tsunami damage inland between these two areas, which is of higher (3-4m) elevation, though such reports may have existed. However, a report from Calle Hernan Cortes (Zone 8 on Figure 3), in the 3-4m elevation range, clearly indicates no tsunami effects.

Location 6 on Figure 1 apparently saw no tsunami effects. If on the north end of Calle de la Fuente its elevation is 2-3m; if on the south end 4-5m. Thus the resolution of the location of this address is important. Location 4, precisely located at the corner of Calles Stahl and Fosforo, is in the 3-4m range and did not mention wave damage. The house at address 58 Stahl, represented by Zone 5, (exact location unknown, but north of Calle Fosforo) faced east and had its back to the shoreline. The report states that the kitchen and dining room at the back of the house were destroyed by the wave, with much structural damage to the rest of the house, but the house was repairable. Since the precise dimensions and construction of this house were documented, it may prove valuable in estimating the physical characteristics of the tsunami as it hit this location, which is at an elevation of 3-4m.



Figure 5

To the south, Zones 1 and 2 show progressive tsunami effects from west to east. Along Calle Betances (Zone 1), which lies 30 – 70m from the shoreline, houses closest to the beach were totally destroyed, while those to the north were knocked off their foundations and pushed inland. The house with the lowest address number, probably in the northern part of Zone 1, though severely damaged, did not mention tsunami effects. Figure 6, a photo taken looking south from the south end of Calle Betances in 1899 (undoubtedly after the severe hurricane of that year) shows what houses along the street looked like, albeit 20 years before the earthquake. Some of the Betances damage reports may be for houses shown in this photo.

Along Calle Progreso about 50m to the east (Zone 2), and about 70m from the shoreline, the tsunami reached its maximum inland extent. At 48 Progreso (Figure 3) water damage was claimed, but because the inspector could not detect it after the owner repaired the damage, it must have been

minimal. At 56 Progreso the inspector claimed the wave came to within 6 feet of the house, and denied a claim for water damage. At 57 Progreso (Figure 3) water carried away clothing and furniture. At 61 Progreso no damage was detected; the claim was denied. These reports clearly identify this localized area as where the extent of inundation was reached, in this part of the town. The area lies 70 – 80m from the shoreline, at an elevation of no more than 4 m.



Figure 6

In conclusion, tsunami damage from these reports are placed exclusively in areas of less than 4m elevation, and in most cases less than 3m. At two locations in the 3-4m elevation range no water damage was noted. Fortunately, on Calle Progreso two addresses correlated with a cross street and the railroad track provide precise locations, and revealed the maximum extent of inland inundation.

Magazine reports (Figure 5) claim the wave was 30 feet or more high when it hit the shoreline. These observations should provide important constraints on tsunami modeling results, and whether this claim is realistic or not.

Damage in Aguadilla from other Archived Sources

Lafayette School (seen on Fig. 4)

\$800 appropriated for repair, and \$18,000 for a new 6-room schoolhouse on the property. (161/208/2/300) On DVD, (Caja/Legajo/folder/image).

Municipal buildings in Aguadilla: \$30,000 appropriated (161/208/2/308).

From "Informe del Comisionado del Interior de P.R" (on DVD):

Escuela A. Stahl - \$2670
 Insular Telegraph Office - \$1385
 Municipal Hospital - \$12,000
 Plaza de Mercado - \$18,000
 Escuela de 8 Salones (8-room schoolhouse) - \$30,000
 Escuela de 12 Salones (12-room schoolhouse) - \$45,000

Anasco Results

Petitions for Anasco were transcribed and summarized in spreadsheet *anasco_damage_reports_SD_14March2011.xls* . Because Anasco is inland, there was no tsunami damage. Here 81% of the petitions submitted were found in the Archive. Though damage was undoubtedly severe, only 6 new houses were granted as opposed to 137 repaired.

Summary for Añasco

| Source | Total # of Petitions | # "New House" | # Repaired | # Missing |
|--------------------------|----------------------|---------------|------------|-----------|
| Earthquake Board Records | 171 | 6 | 137 | |
| Archive Search | 139 | 0 | 107 | 40 |

Acknowledgments

Mark Zellman obtained LiDar data and performed GIS work
 Seth Dee transcribed petitions for Añasco