Vegetation Management Geographical Information System

As Proposed by the Citizens Advisory Committee
Of the Wildfire Prevention Assessment District

EXECUTIVE SUMMARY

A geographical information system for vegetation management (VMGIS) was first proposed by WPAD CAC to OFD and City Council in April 2015. It was one of three recommendations at the time along with funding a vegetation management plan and subsequent environmental impact report for city owned parcels in the WPAD.

The vegetation management plan and EIR have been funded and contract approved by City Council and work on the VM plan has commenced but is is not clear that any action has been taken to date to fund or contract work on the VMGIS.

It is our strong recommendation that funding be formalized for and work begin on a new VMGIS as soon as possible, and in conjunction with the Vegetation Management Plan and EIR.

Herein we enclose
— I. Vegetation Management GIS Context and Priorities, page 2
(includes Table 1: VM GIS Data Element Context and Priorities, page 4,
and Table 2, Detailed listing of data elements in Table 1, page 8)
— II.Vegetation Management GIS *for City Parcels:* Requirements Document, page 11
— III. WPAD Feedback on City GIS Tool Demonstration, page 16
— IV. Appendix I: Orignal WPAD CAC Recommendation on VM Plan w GIS April 2015, Page 19.
For reference, a link to the same report on the city's web page is here:
WPAD Ad Hoc Vegetation Management Plan Task Force April 16, 2015 Recommendations

Two notable issues of timing have also arisen. Since the city's selected contractor is in fact working now on the Vegetation Management Plan, it is urgently important to avoid re-work that the VM Plan work is coordinated with VM GIS so that the format of the VM plan GIS will be consistent with and usable as a management tool to implement the ultimately approved GIS.

Also, subsequent to the Ghost Ship Fire, which occurred approximately 20 months after this recommendation, the city has also recognized the need for an inspection management GIS system to coordinate OFD inspections and code inspections. While an inspection GIS is important, the VM GIS must have other functionality described in this document.

A VM GIS will be an important tool to manage the implementation of the ultimately approved VM plan. However, an initial VM GIS version is needed even now to manage the city's current ongoing VM effort, greatly improving effectiveness and transparency.

Respectfully submitted,
Members of the WPAD Citizen's Advisory Committee
April 20, 2017

I. **Vegetation Management GIS Context and Priorities**

This document was prepared by members of the WPAD Citizen's Advisory Committee, ***at the request of OFD staff*** to clarify priorities and context for a recommended VMGIS.

In April 2015, the WPAD advisory committee made recommendations, after conferring with city staff from OFD, GIS, and Contracting departments. This was part of a three-fold plan to create

> 1) a vegetation management plan to give a stronger clarity of purpose and increase efficiency and effectiveness in the approach towards Vegetation Management to achieve Fire Safety
> 2) an integrated CEQA and Public Engagement process to to ensure stake holder concerns were addressed upfront in the formulation and adoption of scope and alternatives and
> 3) a VMGIS to address longstanding concerns about tracking the city's work on contract management of city parcels and tracking and reporting that progress.

The GIS was envisioned as a tool to more effectively manage the vegetation management approach ultimately adopted in the VM plan- as a mechanism to ensure close correspondence between adopted measures and contracted work. But this GIS could also be used before the plan is adopted to track current city parcel clearance.

The function of Vegetation Management has evolved over past years in Oakland, yet there is no formalized system for its management. The portion of the recommendation to include GIS in the VM plan was omitted by staff. This document hopes to emphasize the importance of implementing a VMGIS in conjunction with existing management of city parcels as well as the vegetation management plan.

The April 2015 WPAD CAC Recommendations are included with this report. See Appendix I, and find the report at this link:

WPAD Ad Hoc Vegetation Management Plan Task Force April 16, 2015 Recommendations

Subsequent to these recommendations, the city GIS staff did a GIS demo for the WPAD advisory committee, but without seeing our recommendations. Our comments on the demo follow on page 16.

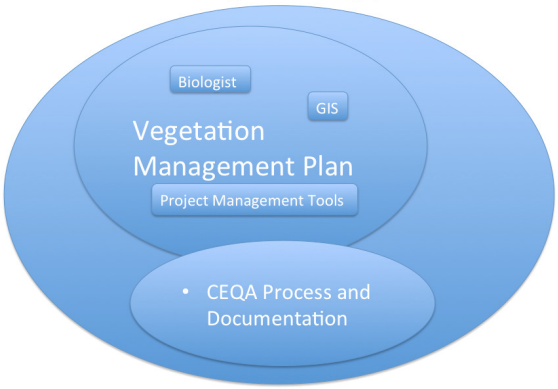
Data Elements, Priority, Context, and Functionality. The primary focus on the VMGIS is shown in the Table 1, on page 4 column #1, outlined in red. The City owned parcels in the High Fire Risk Urban Wildland Interface are the primary focus.

This set of parcels is fairly small- 412 parcels- and their categories have been increasingly well defined. See Table 2.

The **Requirement Document for City Parcels** outlines two phases of GIS development, one fairly simple for tracking, and a second phase more intensive to develop management tools to more effectively manage the budgeting and contacting for these parcels. The key distinction here for these city parcels is that City of Oakland funds are being spent (whether it be WPAD, General Funds or other) to accomplish VM, so a higher management burden exists here than for the parcels where the city just inspects, while the clearance is provided by others. i.e. Some may have perceived these parcels as only needing a data base for inspection, but this is not the case. ***This set of parcels is not just another example of a type of OFD fire inspection.*** It is also this category that needs to be most closely integrated with the VM Plan formulation, since the VM plan will guide clearance on these parcels. Some graphics are excerpted from the WPAD CAC April 2015 recommendations shown as Graphic 1, Graphic 2, and Graphic 3 to further illustrate. Notably formulation needs to be a team effort. Just as an IT contractor with GIS expertise may not have the expertise to know what should go into a Vegetation Management Plan, a firm with vegetation management expertise, may not have in house expertise to develop a GIS. So as shown in Graphic 1, a team effort was proposed. This could be accomplished by diverse members of the same contracting team under the direction of a prime contractor (recommended) or if the city chooses to contract separately a much greater in-house

Graphic 1

RFP Solicits Combined Teams for an Integrated Approach



Graphic 2

Scope Outline

District Wide Plan	Statement of Goals and Overview of Approach
Guides for development of geographically specific plans	*Definition of types of goals. E.g.* Flash fuel clearance, fire ladder mitigation, prevention of crowning (fire spreading from tree crown to crown), ignition source reduction, maintenance of access and egress. creation of fuel breaks
	Overview of methodologies*: including contracts; use of CalFire crews, Volunteer labor; goat grazing, root pulling; use of herbicides*. (*Denotes which may need CEQA review)
Drawn from roll ups of geographically specific plan's GIS maps	Hazard Definition, Mapping and Ranking. Summary maps of **vegetation**, assets at risk (structures, roads—especially key access/egress routes), and ignition sources (cigarettes, structure fires, vehicles, lightning). [State maps are a given and will be included; these maps provide more information, and may be used to update state maps]
Tools to aid implementation	Macro District Wide Schedule showing the budget, contracting lead times, Personnel, and other implementation resources
	Online tool for members of the public to provide staff input about specific parcels, or suggestions on clearance methodology, history etc. An citizen "eyes and ears" function like PWA "See ,Click, Fix"
	Compliance reporting tool to track status (annual survey completed, contracted, completed) for each public parcel
	Internal financial management system so staff can track bids, compare contract costs from year to year, and other trends

Table 1: VM GIS Data Element Context and Priorities

	VM Plan			**Code Compliance**
	Public Parcels In WPAD (or High Fire Risk Area)		Private Parcels	
	WPAD Parcels (or High Fire Risk Area)			
	VM Plan GIS			Code Compliance
	This Column is the focus of the Oakland Vegetation Management GIS	This column could be added later		This is the focus of the Ghost Ship Fire
	#1. **City Public Parcels** with **Vegetation Management *Contracted* by city** within district	#2. Other *public parcels from large public entities, c*oordinated by Oakland	# 3. ***Private parcels*** in Fire District currently inspected	#4. **Private,** developed parcels ***city wide***
Relative numbers of parcels	412 City Parcels- Vegetation Contracts, (Vacant City Lots & Roadside Clearance) Goat Grazing *(small, finite and now well defined)*	EBMUD- 344 Acres, Prelate College-123 Acres 'CALTRANS'- 72 Acres OUSD-130 Acres PG&E 49 Acres EBRPD & UC Berkley out of jurisdiction	23,421 Parcels- (21,317 Residential + 2010 Vacant Lots)	> 100,000 parcels including >14,000 non residential and > 95,000 Residential
	City Manages the inspection **and manages the contracts** for clearance	City coordinates inspection, clearance done by those public agencies	City manages the inspection- private land owners are responsible for clearance	Coordination with Code inspections is a primary concern
City Does Inspections	X	X	X	X
City Manages and Contracts for Parcel Clearance	**X**			
Example Data Elements	1. Parcel Physical annual inspection	Inspection and Compliance Status	1st Inspection	Relevant CEDA Code Inspections, complaints
	2. Vegetation inventory and annual update and other info from VM management plan, endangered specifies, VM scope requirements, topography, etc.		2nd Inspection, when applicable	Building Permits
	3. Annual public input received for this parcel (if so attached)		3rd Inspection, when applicable	OFDFire Inspections
	4. Scope for clearance written		Enforcement Action, Lien, when applicable	Certificates of Occupancy
	5. Contract put out for bids			
	6. Scope for clearance contract complete			
	7. Contractor work complete and parcel has been cleared and is compliant			
Reports	Monthly Summary Parcel Status Map/Report w color coded status			
Additional Management tools to be considered	See report for description of additional management tools to help the city manage the process in each category above			

coordination burden would be assumed.

Secondly, an ideal VM Plan would have an overarching strategic plan and also have geographic specific elements, which could be formulated using GIS maps, to be used as a reference for OFD preparing annual contracts, and to enable annual updates of site conditions during their annual inspections. Experience has shown annual contract preparation to be a process that needs to be streamlined. The parcel map data elements may also be able to record constraints such as endangered species, so they can be readily referenced as contracts for parcel clearance are prepared. Experience has shown there has been difficulty even recording endangered plant species from year to year on the same parcel. In future, translating the requirements from a voluminous EIR and VM Plan to parcel specific contracts could prove to be an even more cumbersome challenge for OFD staff. For this reason, having an overall plan with overarching strategy and goals, with specific geographic sub plans, dealing with the specific topology, fire risks, vegetation etc, down to the the VM prescription guidance at the parcel level, organized by GIS, would make the implementation more straightforward and efficient. On a more general level, having geographic sub plans will help focus the public discussion on the local merits and fire risks identified, and help limit the spread of abstract controversy.

Graphic 3

Geographically Focused Sub Plans

Geographically Specific Plans	Specific Plans for each area with GIS mapping
	Geographic Information System (GIS) maps of relevant city parcels- utilizing Oakland GIS data base for layers such as parcels, relevant public structures, creeks and roads (including ability to designate priority access and egress streets). Include updatable layer with inventory of existing vegetation to be managed and any protected species. Also information on priority access and egress corridors, aspect, slope, soil type, and wildlife as may be relevant to VM.
	Goals as they apply to this site such as: Flash fuel clearance, fire ladder mitigation, prevention of crowning, ignition source reduction, maintenance of access and egress, fire breaks, defensible space around relevant public structures
	Annual prescription written in sufficient detail to be able to feed contracts for city parcel vegetation management, and addressing methodology and required schedule

This concept needs to be developed further, with the approach adopted for the VM plan itself, but certainly a GIS could be a tool to record the binding aspects of the adopted Vegetation Management Plan/CEQA EIS, as well as a mechanism to record annual inspection results, vegetation inventory updates, and annual citizen comments of observations, and the parcels change over the years. So the the column #1, city parcels needs the earliest attention and coordination with the VM Plan

Referring back to Table 1, some simple reporting metrics are included, for measuring progress of parcel clearance numbered 1-7. (these may need to be fleshed in through discussion). The current reporting on these parcels only

indicates “complaint” or “not compliant”. However, this system would be able to report not just the “end state” but where in the process any particular parcel is, or even the status of the overall group of city managed parcels are. Including this in a GIS would allow a simple print out of a Map showing parcel progress. This allows for the identification of bottlenecks, and allows a visual tracking of progress during the fire season.

This will become even more important after the sunset of the current WPAD sunsets. The High Fire Hazard area remains, and the city will continue to need to accomplish clearance, whether through General Funds, WPAD funds or some successor district. With monthly WPAD meetings, it will become more important to have automated reporting. Once the new VM plan is adopted, whatever that scope may be, the GIS will be an important tool in the implementation.

Further information is provided in the **Requirement Document for City Parcels** to flesh in these data elements in more depth. Lesson learned: Experience has shown that the schedule, progress, and management of city contract parcel clearance has been the most problematic area. This is also where the city not just inspects, but also spends funds on actual clearance contracts. Thus, the GIS tracking system and associated management tools for this are is the top priority, both in urgency, in need for management control, and also with respect for need or VM Plan integration. (see table 1, column 2, data element 2 for example data integration requirements). Subsequent sections of this document provide more detail and outline a phase 1 and a phase 2 for this VM GIS.

Now for the purpose of priority and context, we can look back at Table 1 to address other data elements.

The column to the right- #2 - shows other public parcels that could be added as a later priority. For these, the actual clearance work is accomplished by other named public agencies, so the GIS does not need intensive management tools. But it would be useful to have a holistic status, and a GIS tool to track these inspections would be useful.

The next column - #3 -shows private parcels currently inspected within the Fire Hazard District. These are ***far more*** numerous- over 23,000 are currently tracked. These should be added eventually as well, but since they are far numerous, and these inspections accomplished by the fire companies, have not had problems with tracking- the historic problems associated with these parcels are more related to policy questions of rigor of the inspections rather than tracking problems- this would be a later priority.

The far right column shows a broader picture for parcels Oakland wide. In Dec 2016, approximately 20 months after the WPAD CAC recommendations, the Ghost Ship fire occurred. Investigations are still in progress and out outside the purview of the WPAD CAC. However, one issue that has been identified is that there is a need for the city of Oakland to coordinate inspection data bases for such things as Code Inspections, Building Permits, Fire Inspections, and Certificates of Occupancy. The data requirements here are still being defined,

but to give a relative order of magnitude, there are over 100,000 private parcels city wide, including more than 95,000 residential and 14,00 non residential. This is roughly captured in column #4. There is some overlap with column 3, “Private Parcels within the Fire District, and perhaps greatest commonality there since arguably column 3 parcels are a subset of column 4. And there is also commonality in that there are aspects of inspections that apply to all columns.

But notably there are data elements that are unique to the column 1 which are city owned parcels where the city does not just perform inspections but also contracts for and manages vegetation clearance contracts with city funds. This section needs a different set of data elements, and it also needs to be coordinated with the Vegetation Management Plan during the formulation phase. Its also true that the VM GIS requirements are different enough that they need to be specifically considered as the city chooses its software. The long standing VM GIS requirement should not be lost in the shuffle in the important but newly identified need to upgrade fire and code inspection data base management.

Table 2 – Detailed listing of data elements in Table 1

Data for Table 1, *Column #1* 412 City Parcels- Vegetation Contracts, (Vacant City Lots & Roadside Clearance), Goat Grazing

INSPECTED WPAD CITY PROPERTIES 416 = Total	Compliant (Passed)	%	Non Compliant (Failed)	%
City Properties - As of 12/30/2016	412	99%	4	1%

City properties clearing pending - 4 (bid exceeded maximum dollar amount, scope of work to change for re-bid)

City properties in Goat Grazing areas- 54

Approximately 1,400 acres of City Property in the WPAD area.

VEGETATION CONTRACTS

Clearing results are from the 2015-2016 Fire Season.

Vacant City Lots & Roadside Clearance

Clearing measured in miles & City Lots per contract.

Approximately 75 of the 300 miles of public access roadway in the WPAD area is suitable for clearing.

Location	Month	Tracking	$$$	Miles cleared	City Lots cleared
Magellan Dr @ Drake Dr (Broom Pull)	January 2016	15ACP036	$ 640.00	0.25	1
Grizzly Peak Blvd.(Broom Pull)Fish Ranch-Marlborough	January 2016	15ACP035	$ 4,800.00	2.5	0
Skyline Blvd (Broom Pull 7700-8100 block)	February 2016	15ACP038	$ 4,622.00	1	4
Skyline Blvd (Broom Pul Elverton Dr. to Diablo Rd)	February 2016	15ACP039	$ 4,244.00	1	1
Escher (Broom Pull)	March 2016	15ACP041	$ 5,400.00	1	N/A
Joaquin Miller (Crane Way to Sandborn) Part 1	May 2016	15ACP045	$ 6,210.00	2.5	2
Broadway Terrace	May 2016	15ACP048	$ 5,610.00	1	3
Park Blvd.	May 2016	15ACP046	$ 3,605.00	2	3
Skyline Blvd (Redwood Rd to Joaquin Miller)	May 2016	15ACP047	$ 8,277.00	2.14	5
Broadway (6900 Block Sportsfield)	May 2016	15ACP050	$ 5,562.00	0.25	1
Caldecott Ln. @ Tunnel Rd. (Firestorm Memorial)	May 2016	15ACP051	$ 3,470.00	1.5	4
Skyline Blvd (Redwood Rd. to Grass Valley)	June 2016	15ACP053	$ 4,090.00	2.14	2
Skyline Blvd (Redwood Rd. to Grass Valley) & Fire Trail) *	June 2016	15ACP054	$ 12,390.00	2.14	0
Skyline Blvd (Redwood Rd. to Grass Valley)	June 2016	15ACP055	$ 4,132.00	2.14	0
Skyline Blvd (Redwood Rd. to Grass Valley)	June 2016	15ACP056	$ 4,132.00	2.14	0
Skyline Blvd (Redwood Rd. to Grass Valley)	June 2016	15ACP057	$ 5,532.00	2.14	0
Skyline Blvd (Redwood Rd. to Grass Valley)	June 2016	15ACP058	$ 6,490.00	2.14	0
Skyline Blvd (Castle Dr to CSSC + City Lot)	June 2016	15ACP064	$ 3,245.00	2.14	1
Skyline Blvd (CSSC to Palo Seco Reservior)	June 2016	15ACP065	$ 3,244.00	2.14	1
Skyline Blvd (Palo Seco Reservior to JM Rd.)	June 2016	15ACP066	$ 3,244.00	2.14	1
Skyline Blvd (@ Manzanita Dr.)	June 2016	15ACP062	$ 2,200.00	1.5	1
Bay Forest Rd. (Roadside & City Lot)	June 2016	15ACP063	$ 4,170.00	1.5	1
Snake Rd (Montclair Railroad Trail) & City Lot	June 2016	15ACP061	$ 2,090.00	1.5	1
Geranium Place (Roadside & City Lots)	June 2016	15ACP060	$ 1,672.00	0.25	2
Fontaine (Roadside- done by ECI contract)	June 2016	N/A	N/A	1	2
Grizzly Peak Blvd.(Marlborough Ter- Grizzly Estates)	June 2016	15ACP059	$ 4,132.00	4	5
Redwood Rd./ Old Redwood Rd	July 2016	16ACP007	$ 3,500.00	3	2
Golf Links Rd (Mountain Blvd intersection East)	July 2016	16ACP003	$ 7,180.00	3	2
Joaquin Miller (Sandborn to Skyline) Part 2	July 2016	16ACP004	$ 3,400.00	1	10
Golf Links Rd (Mountain to Sequoyah) ROW & City Lots	July 2016	16ACP005	$ 6,632.00	2	2
Dwight Way (ROW & City Lots)	July 2016	16ACP006	$ 2,130.00	0.25	2
Skyline Blvd (Skyline @ Colton & City Lots)	August 2016	16ACP009	$ 4,550.00	1.5	7
Shepherd Canyon Rd. (ROW & City Lot)	August 2016	16ACP010	$ 8,277.00	5	8
Monterey Blvd. (Guido)	August 2016	16ACP014	$ 2,350.00	1	1
Keller Ave. (PWA streets & sidewalks)	August 2016	N/A	N/A	3.4	3
Castle Dr. (Roadside- done by ECI contract)	August 2016	N/A	N/A	1	3
Tunnel Rd. (CalTrans @ Hiller Dr.)	September 2016	N/A	N/A	1.35	0
Claremont Ave (2 mi ea. Way)	September 2016	16ACP012	$ 6,280.00	4	2

Goat Grazing Contract

Total: 1394 acres ≈

Per the Contract- Joaquin Miller Park (JMP) 427.03 acres: & Knowland Park (KP) 457.94 Only select areas within these parks will be grazed based on fire hazard, **(JMP) approximately 100 to 225 acres & (KP) approximately 220 to 350 acres.**

COMPLETED	Acres Cleared
King Estates	80
Joaquin Miller Park *	150
Oak Knoll Naval Hospital	5
Knowland Park **	250
Dunsmuir House, Gardens	63
Sheffield Village	171
Shepherd Canyon	15
Grizzly Peak (open space)	75
Beaconsfield Canyon ***	4.3
TOTAL ACRES CLEARED	809
TO BE GRAZED	Acres to Clear
TOTAL ACRES TO BE GRAZED	0
Total Acres	0

All areas are completed grazed. Due to larger volumes of vegetation growth, the goats were in designated grazing areas longer than initially anticipated. Tunnel Rd goat grazing at Gateway garden has been completed.

Data for Table 1, *Column #2,* Large Public Entities

LARGE PUBLIC ENTITIES

- **EBMUD 344 acres - DONE**
- **Peralta College - 123 acres - DONE**
- **Caltrans - 72 acres – DONE - finished for this season.**
- **OUSD - 130 acres- DONE-** (*24 compliant & 0 Non compliant*).
- **PG&E - 49 acres- DONE- Clearing completed as of November 08, 2016.**
- **EBRP - 776 acres – Out of our Jurisdiction (regulated by their own Fire Department).**
- **UC Berkeley - 801 acres– Out of our Jurisdiction (regulated by the State Fire Marshal).**

Burdeck Dr (Bikepath)	September 2016	16ACP018	pending	0.33	1
Skyline Blvd (City Lots & Roadside)	October 2016	16ACP016	15,640	1.5	10
Thorndale Dr (Jewel Ct to Skyline Blvd)	October 2016	N/A	by EBRP	0.75	0
Trafalgar Place (from LaSalle Ave to Park Blvd)	October 2016	N/A	by PWA	1	0
Montclair Railrd Trail & Along Shepherd Canyon Rd	December 2016	16ACP024	Bid too high	-	-
6300 block Skyline to Elverton	January 2017	16ACP026	$ 4,520.00	1	0
Montclair Railrd Trail & Along Shepherd Canyon Rd	February 2017	16ACP024-2	out for bid	0.01	4
* Price increase includes clearing of Roadside & Fire Trail		TOTAL	$ 177,662.00	75.24	98

NOTE: CSSC- Chabot Space and Science Center, JM- Joaquin Miller, ROW -Right Of Way

The Fire Prevention Bureau determines clearing priority based on the fire hazard of the property, and funding availability.

Data for Table 1, *Column #3,*
Private parcels in Fire District currently inspected

Annual inspections completed by Engine companies & the Fire Prevention Bureau Vegetation Management Unit

INSPECTED RESIDENTIAL PROPERTIES 21,358 = Total	Compliant (Passed)	%	Non Compliant (Failed)	%
Residential - As of 1/10/2017	21317	99%	41	1%

22,458 total inspections completed, including First- Fourth round inspections and complaints.

INSPECTED VACANT LOTS 2063 = Total	Compliant (Passed)	%	Non Compliant (Failed)	%
Vacant Lots - As of 1/10/2017	2010	97%	53	3%

Increase of failed inspections due to citizen compliants, properties found Non Compliant.

23,421 = Total of Vacant Lots + Residential Parcels Inspected

Residential Non- Compliant Inspections Timeline (approximate)

1st inspection notification= at least 30 days to correct

2nd inspection notification=at least 15 days to correct

3rd inspection notification=at least 10 days to correct Final notice and hearing date issued via certified mail.

II. Oakland Vegetation Management GIS ***for City Public Parcels***
Requirements Document

Its important for Vegetation Management of City parcels to be done in a timely matter so that parcels are complaint duration the height of the fire season. Its also important that city parcels be cleared on the same schedule that is required of private parcels owners.

Currently, OFD has no automated system for tracking inspections and more important, for tracking and managing the steps for contracting the clearance of the city parcels.

In March and April of 2015, the WPAD CAC made comprehensive recommendations for three integrated processes:

1) District Wide VM Plan with an overall strategic plan and geographically focused specific plans which contain the detail of the approved approach and prescription.
2) Pubic Input and CEQA process to be completed in parallel and integrated with the VM Plan so public input, and real consideration of alternatives is done early in the process and pubic inout is integrated into decision making.
3) A Geographic Information Management System (GIS) to help track and manage the implementation. Whether this is contacted separately or along with the other parts,it needs to be done in parallel and closely coordinated.

Parts 1 and 2 have been approved by Oakland city Council and contracted for. However the GIS has not been contracted for and the budget requirement has not been identified.

The WPAD CAC provided input on the GIS component in April 2015, which is attached. Additional refinement is provided here.

Since April 2015, the tragic Ghost Ship Fire identified similar deficiencies in city the city system for managing code inspections of buildings and structures. A GIS system mayalso help in that regard, however it's important to note that a VM GIS may have very different requirements, that should not be lost in the effort to improve building code inspections. Some of those requirements are outlined here. Ultimately a GIS scope must come from OFD to the city's IT department.

This is intended as a discussion starter. An Oakland Vegetation Management GIS may serve many functions, but its value as a tracking tool to track clearance of city parcels is a primary and very important purpose, and should be taken as the first phase go GIS development. A second phase of GIS system development can also be a tool to aide in the implementation of Vegetation Management.

Overview:
Given the attached sample list of parcels as an example, we can describe the data structure required. OFD manages the clearance of City parcels by contract. GIS can be a tool to track the progress of the clearance efforts for parcels or groups of parcels.

The following data elements need to be defined for each parcel
1. Parcel physically inspected
2. Vegetation inventory update (and the info from VM management plan)
3. Pubic input received for this parcel (if so attached)
4. Scope for clearance written
5. Contract put for bids
6. Scope for clearance contract complete
7. Contractor work complete and parcel has been cleared and is complaint

The exact type and definition of each data field may need to be further fleshed in through discussion, but the above list can serve as a starting point for the discussion.

Reports:

The primary report that can then be generated is a of each parcels (or geographic grouping of parcels) listed out with their status, in terms of each of these status descriptions as to where the parcel is in the process.
This could be displayed in a monthly report in two ways:

1. As a table for each month listing the step/phase that each parcel is in. i.e. in the attached table, the last column lists “City Lot’s cleared”. This existing report only shows the completion of the process. This new report would provide more resolution and enable a status of each parcel to be listed in this column instead to show the progress on the parcels as they go through the process. i.e. for each parcel the status would be listed in this column far right column as status 1-5.

2. (preferred) This could also be made as a summary map, with a color code assigned to each status- (one possibility would be to have the shades of color get darker for higher levels of progress, or colors progressing from red, to orange to yellow to green in shades as progress proceeds from a “red” or “hazardous” state to a “safe” or “green” state.) An overall map of the district would show the overall progress of the district at a glance as city parcels progress through the process each month.

Further comment on data fields. This is envisioned as a two-phase process.
The tracking metrics 1-7 above and the first phase. Further data elements may be added over time during the 2nd phase. In each case, some fields may be public, but there may also be additional data elements that may be for internal city use that are not public.

Data Field 1. Parcel Physically inspected? could be simply a status field "Physical Inspection Compete? Y/N?" However, with additional data elements this could also be used to complement a mobile device field tool. In other words, when inspectors are in the field to perform the inspections, they may have software on mobile device (e.g. tablet) that would aide their work. They could actually enter the inspection comments into a data field that makes the comments readily available, and organized by parcel to facilitate the later work to create a contract scope for that parcel or group of parcels. Further refinement, could be that inspectors could reference past year's inspection reports, or even past year contract scopes, to be able to note what is the same and only have to note what is new for this year.

Data Field 2. Vegetation inventory update (and the info from VM plan.) This second data field may be one that needs to be coordinated with the contractor who is now doing the Vegetation Management Plan. The VM Management Plan as envisioned and proposed by the WPAD advisory board in April 2015, would have an overall strategy component that is consistent across the district. However plans for geographically specific areas- (e,g, King Estates, Shepherd Canyon, Joaquin Miller Park parcels) need to apply these general concepts and strategy to the specifics of each geographic area. Attributes such as "north/south facing slope", "type of predominant vegetation", "fire ladder concerns"- or whatever may be defined in the VM process- may be evaluated as part of VM field surveys and adopted in the VM process of its own accord. The point here is that whatever is included for a parcel, or geographic group of parcels, could be organized in such a way as to make it readily available to the city staff member when contract scopes are being prepared, to ensure the approved VM plan and the contract are consistent. One example would be CEQA requirements that may apply to a parcel. For example if endangered plant species, or creek/watershed constraints are identified for a parcel, the GIS provides an organized way to reference these so that they can be considered as the scope is developed. Some aspects of this field may be fixed, in the "approved VM Plan and CEQA document" and some aspects like and annual update may (which could be part of field 1, may be annually variable) Overall, this would be a great aid to smooth CEQA compliance and effective contracting, even as city staff may change over the years, the continuity of information will be preserved.

The GIS was originally proposed as part of the VM plan, but was not included in that scope. If it is done separately, then it must be coordinated. The selected VM contractor does have GIS capabilities, and understands this type of approach, but its not in their scope. If GIS is going to be undertaken as a separate scope, then coordination, on approach, format, type of software to be used etc, will reduce the potential for overlap and re-work. The value of the VM plan, and the streamlining of implementation, may be greatly enhanced by coordinating this important aspect.

Data Field 3. Annual Pubic input received for this parcel. Y/N? When input is received, it could be easily retrieved and referenced when making the contract scope. As this GIS is used by members of the public, they may not only be able to check the status of parcels, but also provide input, acting as the "eyes and

ears" of the OFD inspectors (this function might also be extended to private parcel inspections at some point). This could provide an opportunity for members of the pubic to provide comment or post pictures as input to the annual clearance efforts. The comments may or may not be visible to other members of the public-(there is some precedent for this in SeeClickFix, where neighbors can see each other's comments). The fact that the city receives comments does not imply that they agree to all of them. The point here is that the comments have an organized way of being reported, and considered by the city when preparing contract scopes for that parcel. This is much more efficient that current process of calling your council member. There is strong precedent for this type of reporting in Oakland with SeeClickFix.

Data Fields
4. Scope for clearance written
5. Contract put for bids
6. Scope for clearance contract complete.

These may simply be a status field Y/N for the purpose of a status report.
In further phases of development, the city may also be able to add data elements and functionality which will make the process more efficient. For contract scope, the city may be able to attach the scope of work for a parcel electronically in this field, (which, depending on procurement policy, may or may not be publicly viewable) to use for internal administration, or to be used to facilitate bidding, in commercially available bidding software such as Buzzsaw, or potentially through Accella. Other data like "last year's bids, or last year selected contractor price" may help with budgeting and status. For the current year's budget estimating, last year's contracted price could be used as a budget place holder until superseded by this year's bidding. This should be coordinated with other city contracting policy and infrastructure. However, in the meantime, the much simpler "status Y/N" data fields could be used.

7. Contractor work complete and parcel has been cleared and is compliant.
This status data element marks the completion of the parcel clearance . It is a simple Y/N status element. Further phases of development might allow the contractor to populate a data element showing they have completed the work, and the city inspector can populate an element showing the work complete, parcel complaint, and invoice eligible to be paid. Overall approach and phasing-Please note that all of these elements could be organized by parcels, but geographic groups of parcels can be grouped together where appropriate. Also, for the first phase a simple STATUS Y/N? field could be used. Further development may require further coordination, streamlining and refinement of city procedures. That may take more time, but have even greater value, but could be taken in a later phase. Thus a two phase process is suggested:

1.) A simple Phase I Parcel Status Tool and report with data elements that are STATUS
Y/N? fields, and the reports are those two defined above.

2.) A more complex Phase 2 VM Management Tool, that with benefits of streamlining the process, which involves coordination of above mentioned data elements of both:
a.) VM approach and data elements with the VM consultant and OFD
b.) coordination with OFD and City Contracting as to streamlining approach and policy.

III. WPAD Feedback on GIS Tool Demonstration presented by Ahsan Baig I.T.

GIS Feedback – On-line Data Tool for OFD Vegetation Management

Comments on user interface. The demonstration was at an early stage of development such that it did not have functionality described above. For example, a use case might be to display a particular parcel near someone's home, and the GIS could ostensibly be programmed to show if that parcel is in compliance or not. However, that information could just as easily be ascertained by someone physically observing the parcel. They can see for themselves it has not been cleared. When it's cleared, a person would physically see that it is cleared before the data base is updated. Greater functionality would be provided where someone observes a parcel not in compliance, and they could look to the GIS to find out the status- where it is in the process- given the data elements 1-7 described in column #1 of Table 1, as described in the prior two documents.

More useful would be Monthly Summary Parcel Status Map/Report with a color coded status. Having an initial demonstration was much appreciated..

WPAD advisory committee comments on the demo:

Data Labelling

1) Include labels for property Types such as: City parks, roadsides, private vs City owned should be differentiated & shown on parcels map and also appear in Filter menus, as they are added into the GIS data base given the priority outlined above.

2) Adjust "Reasons" category to include more info such as: topography, inaccessibility.

Tool UI

3) As outlined above, create preset queries for frequently used searches such as the tables in the monthly WPAD reports, which as stated above should have the ability to show not just "compliant" or "not compliant" but give a status showing where in the process a parcel is. Create the ability to "SAVE" frequently used queries.

4) Allow ability to configure columns for display or hide, the site seems very crowded between map and columnar display

5) "Create additional functionality on the "Filter" tool: allow the ability to save Filter strings for preferred & frequently used searches

6) Allow columns selected for display to persist regardless of changing filter parameters or moving the map; e.g.: when resizing the map, the selected column headings revert to all headings

7) Allow the pop-up information box on parcel map to be movable & resizable - anchoring it to the parcel map interferes with view or cannot be read if map zoomed beyond border of screen

8) Allow the highlighted property in list to jump into view when a parcel is double clicked on map.

9) Remove owners name and personal information; Parcel numbers and addresses are fine. The final version should not include that information on a publicly accessible layer. Since the county records only use parcel numbers and the owners are not identified on their site when looking up property information.

10) Create tutorials for basic GIS interface operations with using video and screen shots.

11) Create additional tutorials for advanced queries such as "all City owned properties out of compliance" or "all properties out of compliance within 1000 feet of my residence"

12) Create a layer for the parcels and right-of-way comprising the annual roadside clearance. Build in the functionality to create screen shots through time. To allow compliance tracking over monthly intervals or to compare year to date over several years prior.

13) Build in the functionality to create screen shots through time. To allow compliance tracking over monthly intervals or to compare year to date over several years prior.

REPAIR "BUG/ GLITCH"

14) Fix the "bug/ glitch" some non-compliant City properties have no color fill. e.g.: ref # 2016-32055 and 2016-32434

15) Fix the "bug/ glitch" on the Discordance in UI between clicking on map, popup window, list and map zoom

16) Fix the "bug/ glitch" the Map zooms up when parcel is clicked -- makes map too big & hard view.

17) Fix the "bug/ glitch" when you double click parcel (e.g.: in Shepherd Canyon) & APNs don't match with parcel highlighted in list – confusing as to what property is being viewed with info displayed.

18) Fix the "bug/ glitch" of the Disappearing: ESRI navigation tool and pull-down Filter menu on right border disappeared (menu showed "Compliant" "Non-Compliant" and "Pending") – unable find it once it disappeared.

19) **WISH LIST** (LOW PRIORITY)

- List “pending status” property in a slightly different color.
- List the reason for non-compliance
- List the area of parcel
- Highlight in a different color set, city lands in the WPAD areas

20) **TESTING:** Have a quality assurance engineer(s) participate in the testing tool, so the feedback can be given directly to the developers. Additional requirements may be revealed by quality assurance for expanding the tool to develop other database fields.

21) **GIS COORDINATION WITH HORIZON & THE CITY’S GIS TEAM:** The vegetation Management Plan (V.M.P.) Contractor (Horizon) MUST coordinate with the City’s GIS director (Ahsan) so that the V.M.P data set can be compatible with the City’s GIS platform. This will ensure that the V.M.P data set is a useful tool for City staff to access in the future. Communication between Horizon and City staff must happen EARLY so that costly mistakes and rework is avoided and the data set may work smoothly without extra-post production work to make up for incompatibility issues.

Recommendations for Key Elements to be included in RFP For WPAD Proposed Vegetation Management Plan

1. Goal of the Vegetation Management Plan (VMP):

Develop a ten-year Vegetation Management Plan and accompanying CEQA documentation for city-owned property in the Oakland high fire-severity zone/ wild land urban interface (Wildfire Prevention Assessment District). The plan should provide for short and long term fire safety of residents and first responders and for protection of public and private assets, while taking into account impacts on wildlife, habitat, native vegetation as well as aesthetics.

This wording is intended to give a starting point for the scope of work. Comment and discussion during plan development may further refine.

2. Scope of the Work

Consistent with Oakland best practices for similar plans, the scope of the intended work and the RFP is to include both the Vegetation Management Plan and associated CEQA documentation. The intent is that responses to the RFP would come from teams with combined Vegetation Management Plan and CEQA expertise for an integrated approach. The Vegetation Management component should include capabilities of at least a biologist with fire safety background in the wildlands/urban interface, GIS, and municipal project management tools.

3. Public Input

The plans must be developed with wide community input including but not limited to immediate neighbors to defined sub-areas in the plan, formal and informal park

steward volunteer groups, wildfire prevention advocates and others including citizens-at-large. The initial scope of work is for the first year of development, but an annual review cycle is expected and proposals should indicate approach for annual update as well.

Some suggestions for important public input points in plan development, as well as capabilities for reporting out to be supported by the management tools are included in the chart below. Proposals should indicate the approach to be used to combine these public input requirements with the public input requirements of CEQA for an integrated and efficient approach.

4. Vegetation Management Plan Components

The Vegetation Management Plan would have an overall district wide component and then also geographically-focused sub plans for designated areas.

The district wide plan would:

i. Provide guidance for development of geographically-focused plans.
ii. Have maps and other summary data rolled up or drawn from the focused plans
iii. Provide tools to aid staff in managing implementation of the plan, and to aid in summary reporting.

The scope of the district wide plan is proposed as follows:

Scope Outline

District Wide Plan	Statement of Goals and Overview of Approach
Guides for development of geographically specific plans	*Definition of types of goals. E.g.* Flash fuel clearance, fire ladder mitigation, prevention of crowning (fire spreading from tree crown to crown), ignition source reduction, maintenance of access and egress. creation of fuel breaks
	Overview of methodologies*: including contracts; use of CalFire crews, Volunteer labor; goat grazing, root pulling; use of herbicides*. (*Denotes which may need CEQA review)
Drawn from roll ups of geographically specific plan's GIS maps	Hazard Definition, Mapping and Ranking. Summary maps of **vegetation**, assets at risk (structures, roads—especially key access/egress routes), and ignition sources (cigarettes, structure fires, vehicles, lightning). [State maps are a given and will be included; these maps provide more information, and may be used to update state maps]
Tools to aid implementation	Macro District Wide Schedule showing the budget, contracting lead times, Personnel, and other implementation resources
	Online tool for members of the public to provide staff input about specific parcels, or suggestions on clearance methodology, history etc. An citizen "eyes and ears" function like PWA "See ,Click, Fix"
	Compliance reporting tool to track status (annual survey completed, contracted, completed) for each public parcel
	Internal financial management system so staff can track bids, compare contract costs from year to year, and other trends

Tools developed to be compatible with

- City GIS system: ERSI platform, open data, One Step and City Works
- Accepted data structures such as CAL FIRE standards for characterizing trees
- Existing tools and data to conserve effort

Designated Geographic Sub Areas

Geographically-focused sub plans for designated areas will provide more specific local detail and will be supported by a Geographic Information System (GIS). **The intended result would be prescriptions for vegetation management that are sufficient in detail and of an appropriate format that they can be used to provide input into the contract scopes for vegetation management on city parcels.**

Geographically Focused Sub Plans

Geographically Specific Plans	Specific Plans for each area with GIS mapping
	Geographic Information System (GIS) maps of relevant city parcels- utilizing Oakland GIS data base for layers such as parcels, relevant public structures, creeks and roads (including ability to designate priority access and egress streets). Include updatable layer with inventory of existing vegetation to be managed and any protected species. Also information on priority access and egress corridors, aspect, slope, soil type, and wildlife as may be relevant to VM.
	Goals as they apply to this site such as: Flash fuel clearance, fire ladder mitigation, prevention of crowning, ignition source reduction, maintenance of access and egress, fire breaks, defensible space around relevant public structures
	Annual prescription written in sufficient detail to be able to feed contracts for city parcel vegetation management, and addressing methodology and required schedule

Support for implementing resolutions. In addition, part of work will include identifying City ordinances and other governmental approvals required to implement the plan (City Council CEQA certification, amendment to City Integrated Pest Management Plan, etc.)

5. Key Selection Criteria for Respondents

This RFP is intended to be qualifications based solicitation for professional services (rather than low bidder approach as might be applicable for construction or other "implementation" types of contracts) and so the objective factors for selection are particularly important. Suggested criteria include:

- Experience and References
    - Vegetation management for fire safety in the wildland/urban interface
    - GIS and municipal work management system
    - CEQA
    - Public outreach/input
    - Gaining municipal approvals
- Approach
    - Integrating vegetation management plan with CEQA process
    - Conducting public outreach
    - Ensuring optimal utilization of service delivery options (city contract crews, goat contracts, volunteer labor, CAL FIRE crews, etc.)
    - Ensuring that above contractors/volunteers comply with best practice methodologies (mowing, cutting, root pulling, timing, etc.)
    - Integrating and guiding volunteer efforts
    - Ensuring contractor/volunteer compliance with adopted CEQA mitigation methods
    - Ensuring that GIS and project management tools work with City systems and accomplish what we want them to do
    - Reduce cost by using existing software/data
    - Conducting vegetation surveys, and formulating prescriptions
    - Optional, annual updates and costs
    - Process schedule

It is noted that the city's best practices support a **qualifications** based selection approach. This can include an option to provide the budget target number, with proposals to indicate how much respondents can complete, given a budgetary limitation, as well as what additional work could be performed if additional funds were available.

6. Ongoing Support and Input

The WPAD would like to offer ongoing support to the RFP process, through its Vegetation Management Plan Ad Hoc Task Force, as discussed with City Staff and as is consistent with the role of the WPAD Citizens Advisory Committee, in terms of participation in the City's Scope Formulation Team as well as the Proposal Evaluation Team. Given the subject matter of the intended work, the following team compositions are recommended:

Scope Formulation and Proposal Evaluation

Members	Scope Formulation Team	Evaluation Team
OFD Rep	Initiator of Requirement	Staff
Planning (CEQA) Rep	x	x
GIS Rep	x	x
City Contracting Rep	x	x
Potential Subject Matter Expert	x	x
WPAD VM Committee	x	x

Previously approved and long awaited OFD Program Analyst position is crucial to keep this process moving forward

Requested WPAD Committee Action:

1. Approve and forward above recommendations to the City to begin the process of developing an RFP for the Vegetation Management Plan and CEQA
2. Recommend that the WPAD Vegetation Management Plan Ad Hoc Task Force continues to participate as part of the RFP Scope Formulation Team and the Proposal Evaluation Team
3. Recommend that OFD ask the City to proceed with an "Availability Analysis" to allow for proposals from outside of the City of Oakland.